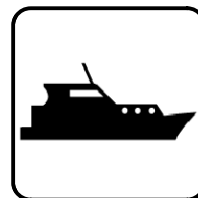


Service Parts

Marine Generator Sets



Models:

7EFOZD/9EOZD
8.5EFOZD/10EOZD
9EFOZD/10EOZD

KOHLER[®]
POWER SYSTEMS

ISO 9001
KOHLER
POWER SYSTEMS
NATIONALLY REGISTERED

TP-6270 11/06c

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Introduction

This manual lists service replacement parts for 8.5EFOZD/10EOZD, 9EFOZD/10EOZD, and 7EFOZD/9EOZD generator sets.

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This manual includes the following main sections:

Table of Contents. Lists the sections of the manual.

Introduction (and other information sections). Contains introductory material about part numbers, illustrations, and hardware.

Specification Number Index. Lists the generator set specs and groups.

Group Parts Lists. List the part numbers of parts in the groups.

Kit Sections. List modules and accessories and their parts.

Appendices. Include Abbreviations, Common Hardware Application Guidelines, General Torque Specifications, Common Hardware Identification, and Common Hardware List.

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Numbering System Significance

This manual uses the following numbering systems:

Specification Number. The product identification number located on the generator set nameplate. Specification numbers break down into groups.

Group Number. A unique number representing a parts group needed to assemble a generator set function. For example, Group 101 is the Air Intake group.

Variation or Module Number. A group might have several variations. Each variation performs the same function with different parts lists. For example, a 50 Hz generator alternator and a 60 Hz generator alternator both perform the same function; however, with different parts. Each difference requires a group variation or module number.

Part Number. The part number identifies an individual assembly, subassembly, component, or accessory kit.

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Illustrations

Illustrations (or exploded-view drawings) best representing the widest range of variations accompany most groups in this manual. Illustrations do not depict all details and may not show all parts. Do not use illustrations for assembly or disassembly.

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How to Find Part Numbers

Use the following steps to locate a service replacement part.

1. Locate the generator set nameplate to **identify the generator set spec number**.
2. Locate a second generator set nameplate listing accessories to **identify installed modules**. On some models the accessory nameplate is mounted inside the generator junction box.
3. **Turn to the Specification Number Index**. The first column lists the generator set spec numbers. The headings identify the groups of parts that make up the generator set.
4. **Identify the group** most likely to include the service part number.
5. **Find the group variation number** at the intersection of the spec number row and the group column. Note the variation number.
6. **Page forward to locate the group** identified in step 4 or find the appropriate page in the Table of Contents.
7. **Find the part on the illustration** and note the item number of the part or **find the part description in the parts list**.
8. Select the **part number that corresponds to your group variation**. The first column lists the illustration item number. Find the variation identified in the Specification Number Index or the module number found on the generator set nameplate in the appropriate column on the right side of the parts list table. Find the quantity used at the intersection of the item number row and the variation column. A blank space at the intersection means the variation/module does not use that part number.

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Hardware References

Many common hardware items do not appear in parts manuals or will appear as common hardware entries. A common hardware entry lists the size of the hardware. For example, an item that appears as "Hardware, 3/8-16" in the text means that the piece is 3/8-16 size. Obtain common hardware locally or, if contacting the factory, use the Common Hardware List in the appendix to identify the common hardware part number and specifications. See Common Hardware Application Guidelines in the appendix for mating hardware instructions.

Some hardware items require a specific size or some other characteristic. In that case, use the part number listed in the text.

When replacing hardware, do not substitute inferior grade hardware. Replacement hardware grade should be equal to or better than the grade of the manufacturer's original hardware. Use the Common Hardware List in the appendix to identify the common hardware hardness.

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Specification Number Index

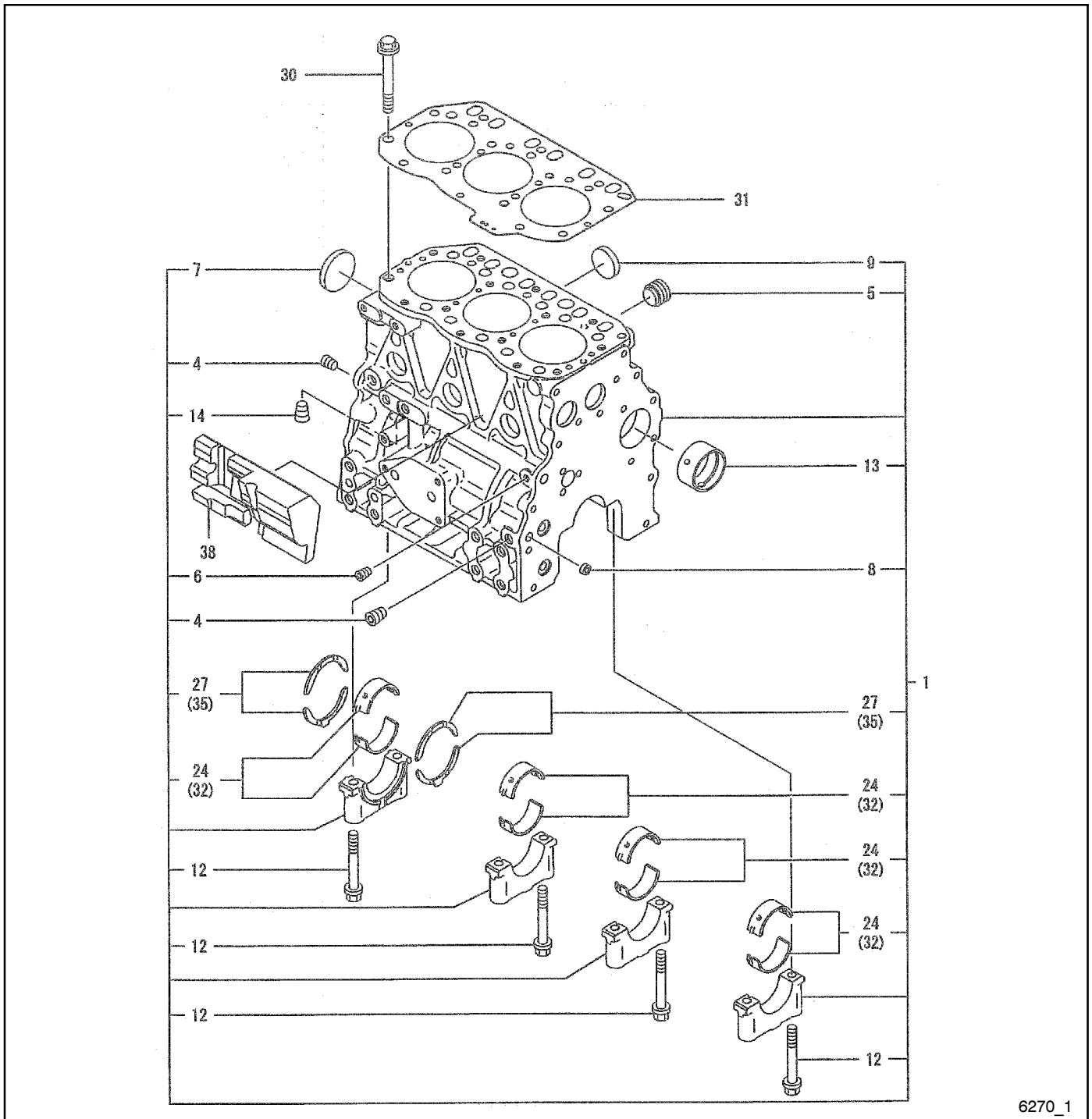
Group Title	<i>Cylinder Block</i>	<i>Gear Housing</i>	<i>Mounting Flange & Oil Sump</i>	<i>Cylinder Head</i>	<i>Intake Manifold</i>	<i>Camshaft and Drive Gear</i>	<i>Crankshaft and Piston</i>	<i>Lube Oil System</i>	<i>Cooling Water System</i>	<i>Fuel Injection Pump</i>	<i>Fuel Injection Valve</i>	<i>Fuel Line and Filter</i>	<i>Starting Motor</i>	<i>Gasket Set</i>
Group No.	1	2	3	4	5	6	7	8	9	10	12	13	14	15
Spec No.	Variation Number													

GM30507-GA1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GM30507-GA2	1	1	1	1	1	1	1	1	2	2	1	1	2	1
GM30507-GA3	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GM30507-GA4	1	1	1	1	1	1	1	1	2	2	1	1	2	1
GM37403-GA1	2	2	2	2	-	2	2	2	3	3	2	2	3	2
GM37403-GA2	2	2	2	2	-	2	2	2	3	3	2	2	3	2

Group Title	<i>Air Intake</i>	<i>Fuel System</i>	<i>Cooling System</i>	<i>Engine</i>	<i>Nameplates and Decals</i>	<i>Skid and Plant Mounting</i>	<i>Generator and Mounting</i>	<i>Controller and Mounting</i>	<i>Literature</i>
Group No.	101	103	104	105	107	109	201	301	701
Spec No.	Variation Number								

GM30507-GA1	GR1	GR2	GR3	GR4	GR5	GR6	GR7	GR8	44
GM30507-GA2	GR1	GR9	GR10	GR11	GR5	GR6	GR7	GR12	44
GM30507-GA3	GR1	GR2	GR3	GR4	GR14	GR6	GR13	GR8	44
GM30507-GA4	GR1	GR9	GR10	GR11	GR14	GR6	GR13	GR12	44
GM37403-GA1	2	3	3	3	3	2	3	3	69
GM37403-GA2	2	3	3	4	3	2	3	3	69

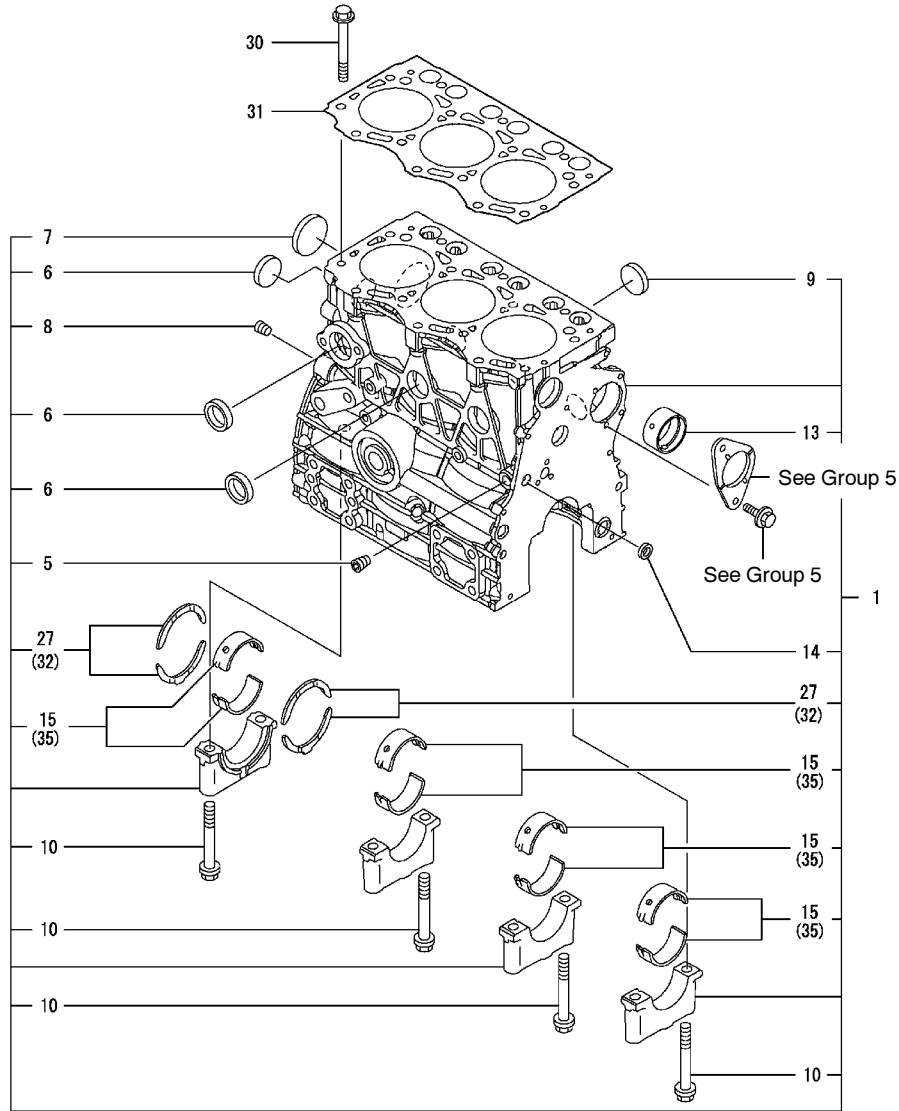
Group 1: Cylinder Block



6270_1

Item	Part Number	Description	Quantity		Item	Part Number	Description	Quantity	
				Var. No.					Var. No.
1	GM35737	Block assembly, cylinder	1		14	252771	Plug PT1/4	1	
4	252771	Plug PT1/4	2		24	GM35740	Bearing, main (std)	4	
5	252566	Plug	1		27	229802	Bearing, main	1	
6	252078	Plug	1		30	225705	Bolt	14	
7	GM35519	Plug 50	1		31	GM33836	Gasket, cylinder head	1	
8	252728	Plug	2		32	225709	Bearing, main	4	
9	225924	Plug 30	6		35	225710	Bearing, thrust	2	
12	225703	Bolt	8		38	GM35428	Spacer	1	
13	252933	Bush	1						

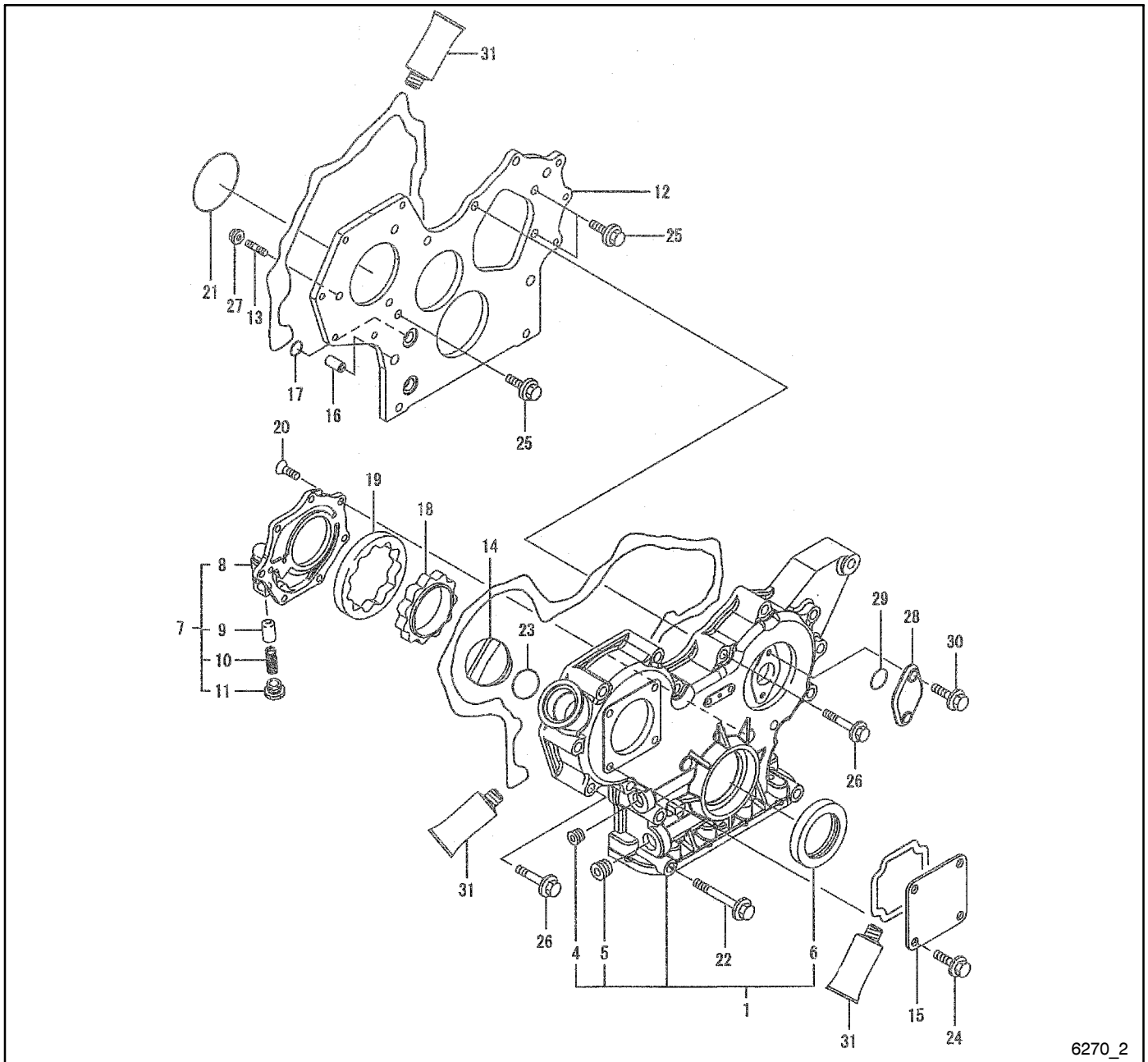
Group 1: Cylinder Block, continued



6270_1_2

Item	Part Number	Description	Quantity
			Var. No.
1	GM47257	Block assembly, cylinder	1
5	252078	Plug	1
6	252028	Plug	4
7	GM47254	Plug 45	1
8	252771	Plug PT1/4	1
9	GM47253	Plug 25	3
10	225703	Bolt	8
13	GM47256	Bushing, camshaft	1
14	252728	Plug	1
15	GM47258	Main bearing set	4
27	229802	Bearing	1
30	225705	Bolt	14
31	GM47255	Gasket, cylinder head	1
32	225710	Bearing, thrust	2
35	GM47259	Main bearing, 0.25 US	4

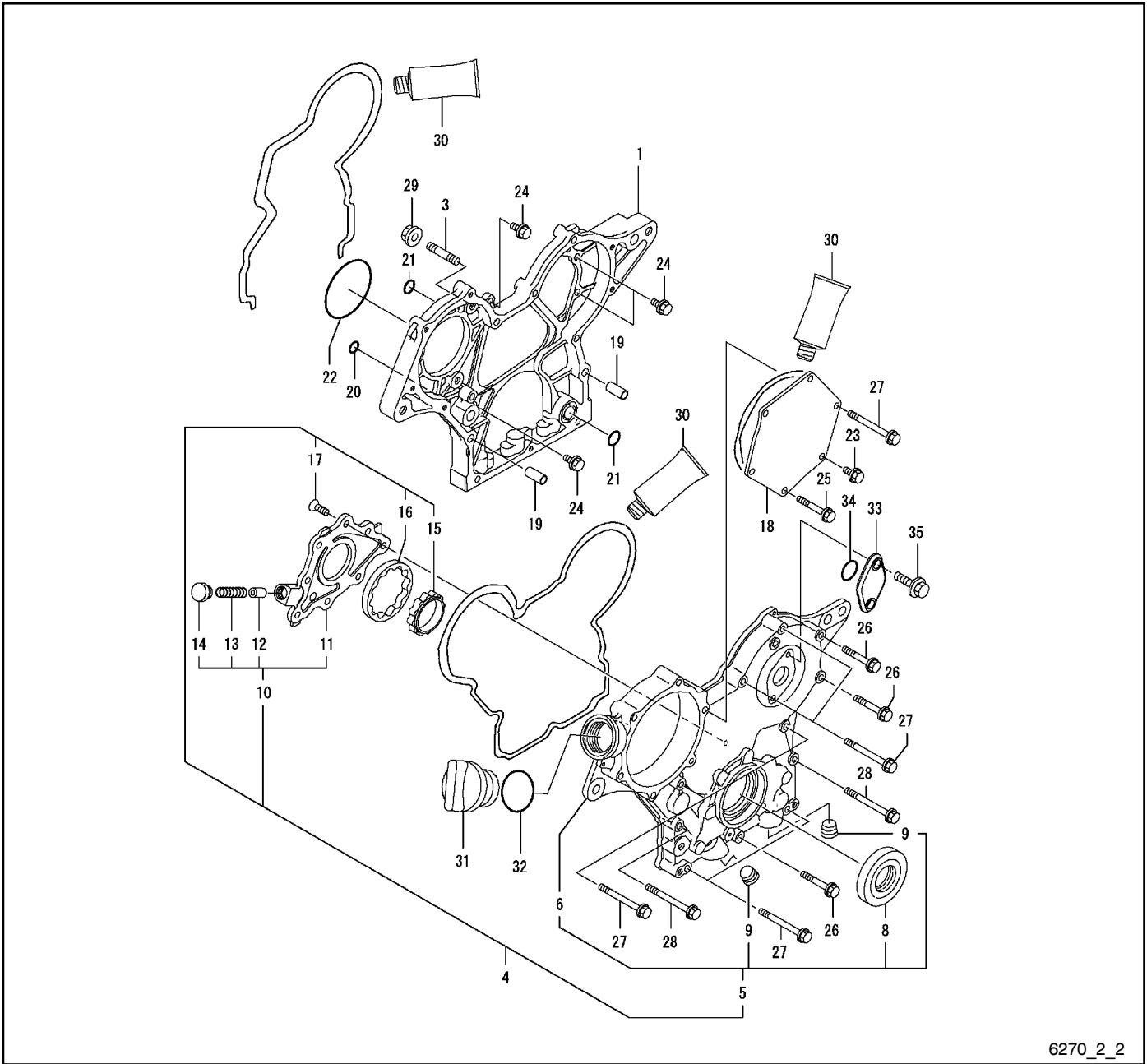
Group 2: Gear Housing



6270_2

Item	Part Number	Description	Quantity	Item	Part Number	Description	Quantity
			Var. No.				Var. No.
1	GM35736	Housing assembly, gear	1	18	GM35465	Rotor, inner	1
4	GM35720	Plug, screw	1	19	GM35466	Rotor, outer	1
5	GM35721	Plug	1	20	GM35467	Screw, M6 x 16	7
6	252931	Oil seal	1	21	252764	O-ring, pump	1
7	GM35464	Cover assembly, pump	1	22	GM35522	Bolt, M8 x 85	3
8	GM35463	Cover, lube oil pump	1	23	252684	O-ring	1
9	GM35653	Valve, relief	1	24	252696	Bolt, M8 x 16	4
10	GM35578	Spring	1	25	252696	Bolt, M8 x 16	3
11	GM35520	Plug	1	26	256798	Bolt, M8 x 55 plated	12
12	GM35429	Flange, gear case	1	27	GM35732	Nut	3
13	GM35430	Stud, M8 x 25	3	28	252750	Cover, blind	1
14	250837	Cap	1	29	256796	O-ring	1
15	256531	Cover	1	30	252693	Bolt	2
16	252932	Knock, pipe	2	31	252998	Gasket	1
17	GM35421	O-ring	4				

Group 2: Gear Housing, continued

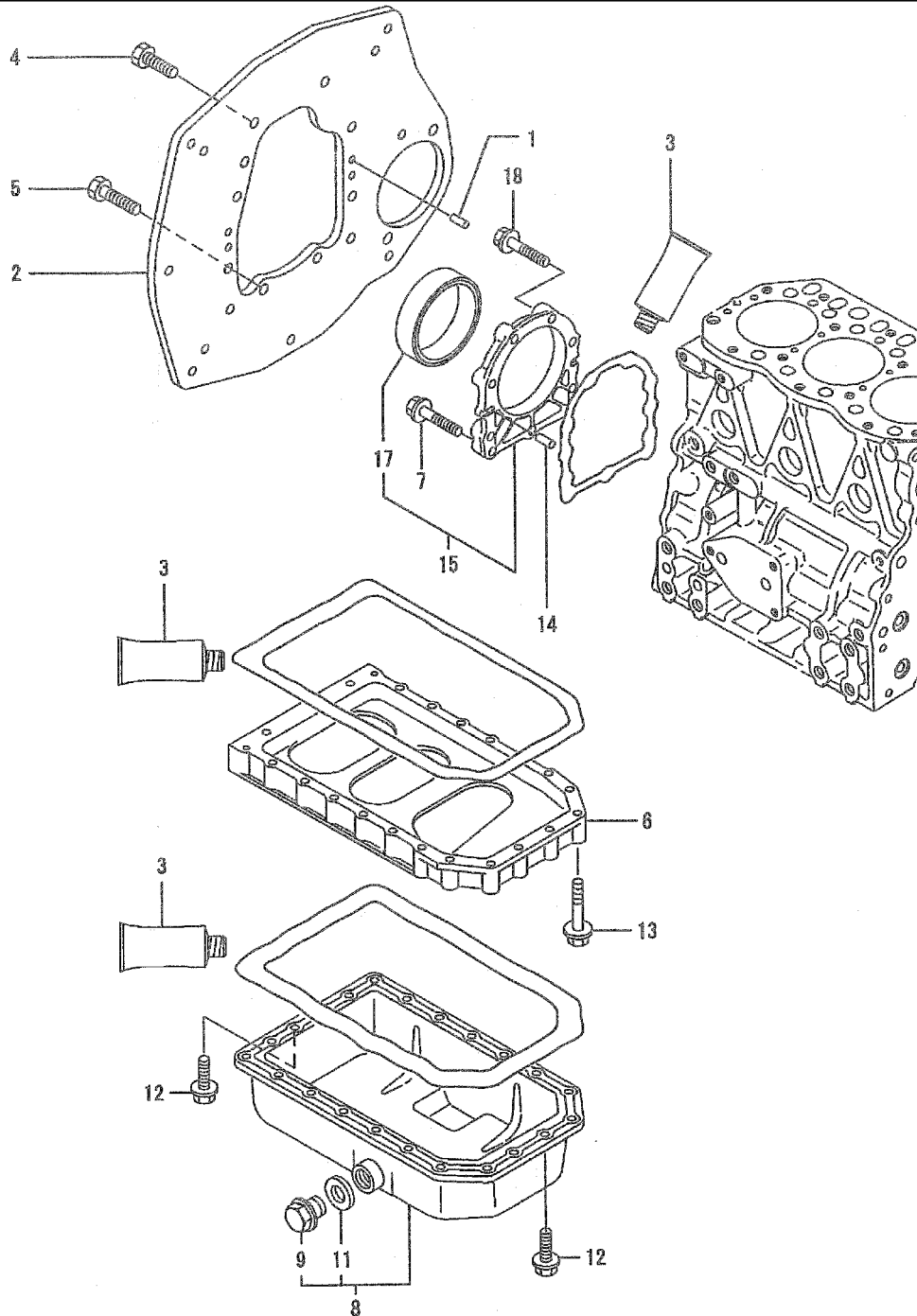


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Group 2: Gear Housing, continued

Item	Part Number	Description	Quantity
			Var. No.
1	GM47261	Case, gear	1
3	GM47262	Bolt, stud M8	3
4	GM47270	Cover assembly, gear case	1
5	GM47272	Cover assembly, gear case	1
6	GM47269	Cover, gear case	1
8	229634	Oil seal	1
9	GM35720	Plug, screw	2
10	GM47266	Cover assembly, pump	1
11	GM47265	Cover, lub. oil pump	1
12	GM35653	Valve, relief	1
13	GM47271	Spring	1
14	GM35520	Plug	1
15	GM47267	Rotor, inner	1
16	GM47268	Rotor, outer	1
17	GM35467	Screw, M6 x 16	8
18	GM47263	Cover, pump timing	1
19	229674	Pipe, knock	4
20	GM47260	O-ring	1
21	GM47264	O-ring	3
22	252764	O-ring, fuel injection pump	1
23	225816	Bolt, M6 x 12	1
24	252693	Bolt	4
25	225921	Bolt	4
26	225921	Bolt	3
27	363207	Bolt, M6 x 60	7
28	229766	Bolt, M6 x 65 plated	2
29	GM35732	Nut	3
30	GM46206	Gasket, liquid	1
31	250837	Lub oil cap	1
32	252684	O-ring 1a p-32.0	1
33	252750	Cover, blind	1
34	256796	O-ring 1a s-24.0	1
35	252693	Bolt	2

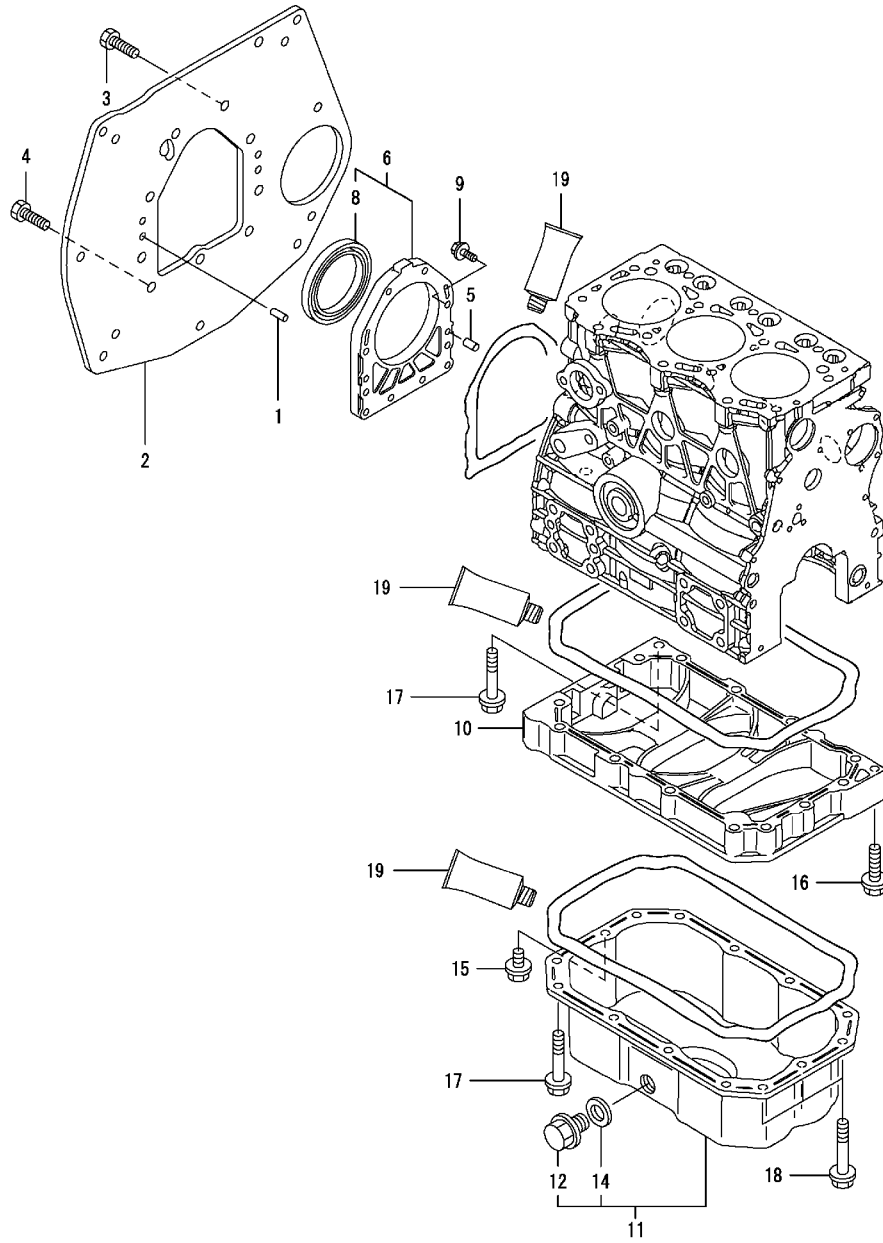
Group 3: Mounting Flange and Oil Sump



6270_3

Item	Part Number	Description	Quantity		Item	Part Number	Description	Quantity	
				Var. No.					Var. No.
1	256750	Parallel pin 8 x 16	2		9	225386	Drain plug M22	1	
2	229114	Mounting flange	1		11	225425	Seal washer	1	
3	252998	Gasket	1		12	252696	Bolt, M8 x 16	6	
4	229505	Bolt, M10 x 20	6		13	252703	Bolt	22	
5	252714	Bolt	4		14	256750	Parallel pin 8 x 16	2	
6	225706	Spacer	1		15	225866	Case assembly	1	
7	252701	Bolt, M8 x 35	3		17	252930	Rear oil seal	1	
8	GM35492	Sump assembly, oil	1		18	363430	Bolt, M8 x 30	6	

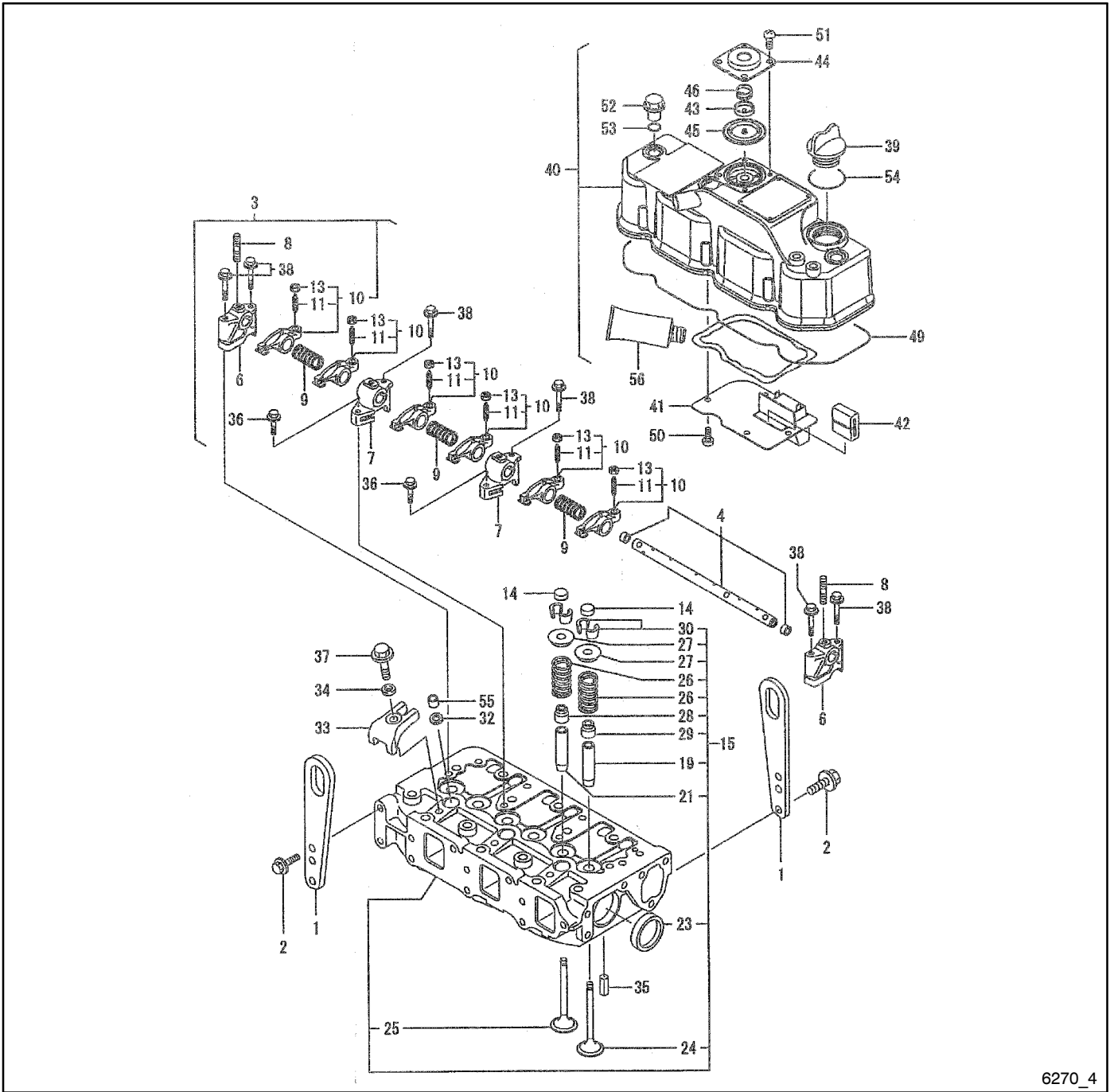
Group 3: Mounting Flange and Oil Sump



6270_3_2

Item	Part Number	Description	Quantity
			Var. No.
1	256750	Parallel pin 8 x 16	2
2	GM47276	Backplate	1
3	229505	Bolt, M10 x 20	7
4	252714	Bolt	3
5	363026	Parallel pin 6 x 10	2
6	229671	Case assembly, oil seal	1
8	250836	Oil seal	1
9	229761	Bolt, M6 x 22 plated	10
10	GM47274	Spacer, oil sump	1
11	GM47275	Sump assembly, lub. oil	1
12	GM47273	Plug, M16	1
14	363448	Washer, seal 16S	1
15	252695	Bolt, M8 x 12	1
16	225819	Bolt, M8 x 30 plated	1
17	252703	Bolt	11
18	252704	Bolt	3
19	GM46206	Gasket, liquid	1

Group 4: Cylinder Head

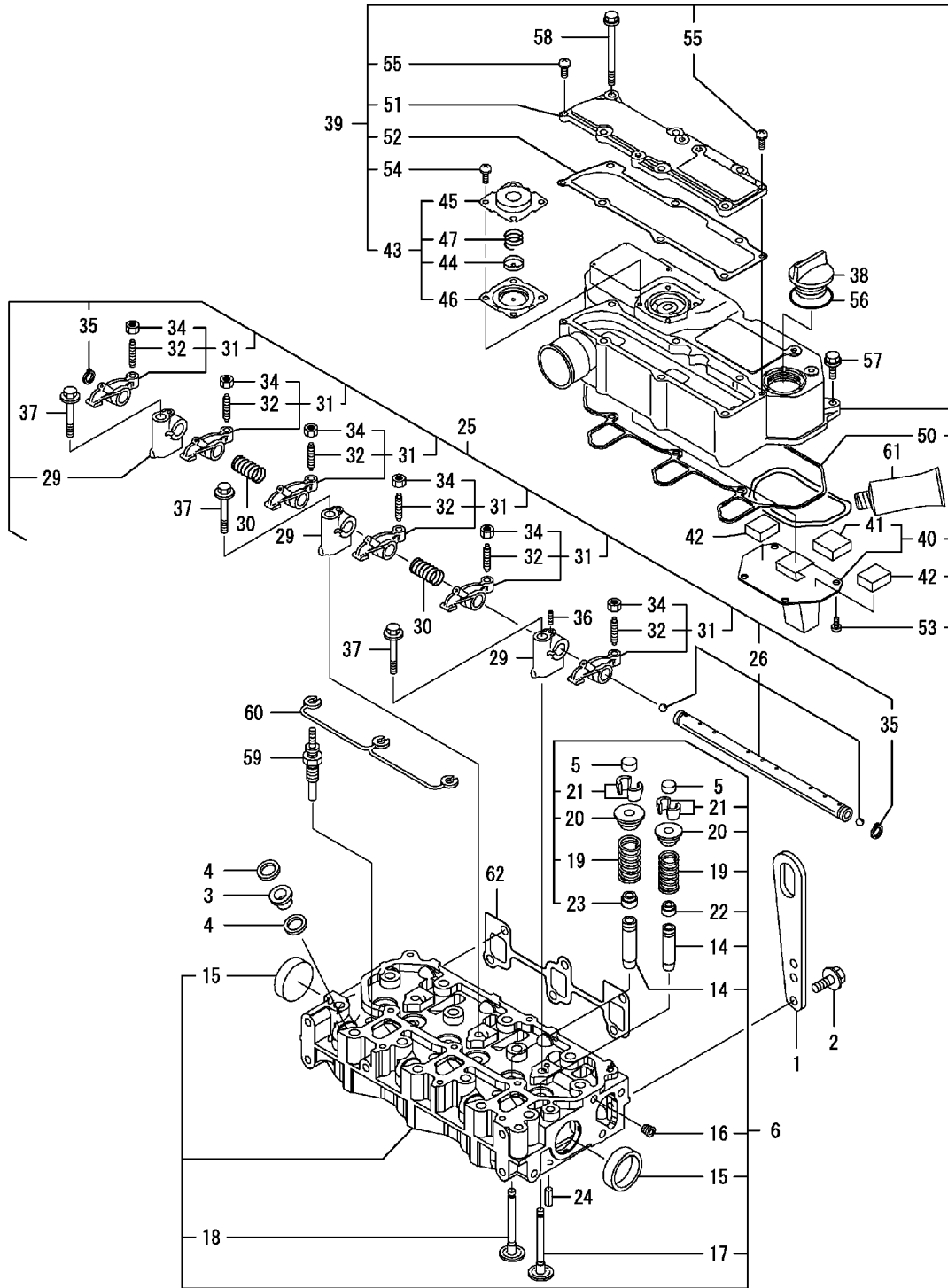


6270_4

Group 4: Cylinder Head

Item	Part Number	Description	Quantity
			Var. No.
1	363110	Lifter, engine	2
2	225818	Bolt, M8 x 14	4
3	GM35440	Shaft assembly, rocker	1
4	GM35441	Shaft, rocker arm	1
6	GM35442	Support, rocker arm	2
7	GM35443	Support, rocker arm	2
8	GM35444	Stud	3
9	252815	Spring	3
10	GM35447	Arm assembly, rocker	6
11	229844	Valve screw	6
13	252817	Nut, M8	6
14	250999	Cap	6
15	GM35448	Head assembly, cylinder	1
19	250835	Valve guide	3
21	GM35449	Guide, valve	3
23	252732	Plug 40	2
24	GM35438	Valve, intake	3
25	GM35439	Valve, exhaust	3
26	225713	Spring, valve	6
27	250882	Retainer	6
28	225766	Seal, valve stem	3
29	250844	Valve seal	3
30	250806	Pin, cotter	6
32	252744	Seat	3
33	GM35451	Retainer, nozzle	3
34	GM35495	Washer	3
35	250963	Spring pin	2
36	252699	Bolt, M8 x 25 plated	2
37	252703	Bolt	3
38	252704	Bolt	6
39	250837	Cap	1
40	GM35446	Bonnet assembly, head	1
41	GM35431	Plate, baffle	1
42	252805	Baffle	1
43	GM35434	Plate, diaphragm	1
44	GM35435	Cover, diaphragm	1
45	GM35436	Diaphragm	1
46	GM35437	Spring, diaphragm	1
49	GM35445	Gasket, bonnet	1
50	363201	Screw, tapping 5 x 10	4
51	363201	Screw, tapping 5 x 10	4
52	252470	Cap nut	3
53	250801	O ring	3
54	252684	O-ring	1
55	GM35450	Protector, nozzle	3
56	252998	Gasket	1

Group 4: Cylinder Head, continued

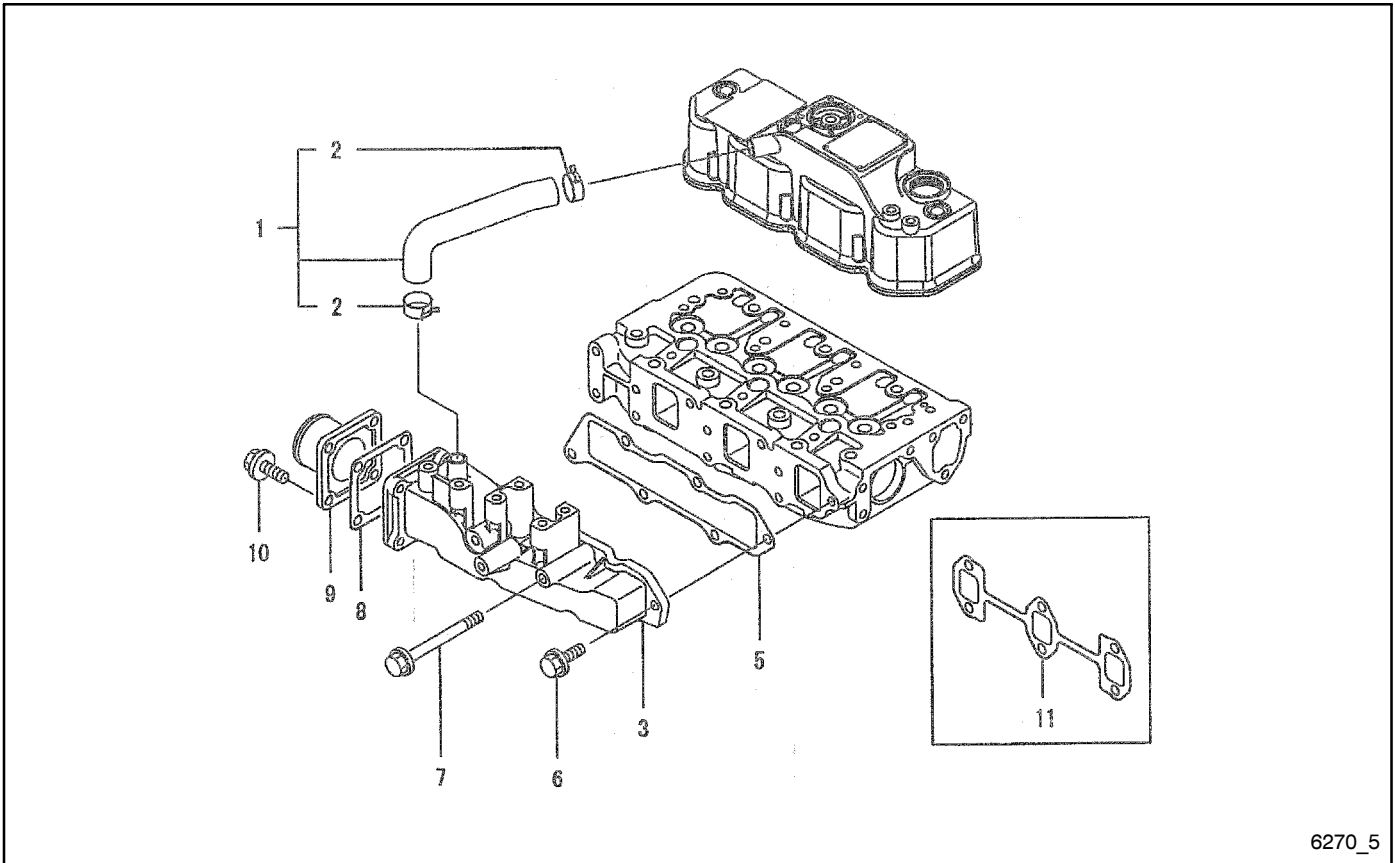


6270_4_2

Group 4: Cylinder Head, continued

Item	Part Number	Description	Quantity
			Var. No. 2
1	GM38596	Lifter, engine	2
2	252696	Bolt, M8 x 16	2
3	GM47297	Protector, nozzle	3
4	229624	Gasket	6
5	GM47277	Cap, valve	6
6	GM47291	Head assembly, cylinder	1
14	GM35426	Guide, valve	6
15	GM47278	Plug 35	2
16	GM47299	Plug 1/16, screw	1
17	GM47281	Valve, intake	3
18	GM47282	Valve, exhaust	3
19	GM47283	Spring, valve	6
20	GM35587	Retainer, spring	6
21	GM35423	Cotter, valve	12
22	GM35424	Seal, valve stem	3
23	GM35425	Seal, valve stem	3
24	250963	Spring pin 6 x 12	2
25	GM47284	Support assembly, arm	1
26	GM47285	Shaft assembly, rocker	1
29	GM47286	Support, rocker arm	3
30	363034	Spring	2
31	GM47290	Arm assembly, rocker	6
32	229844	Valve screw	6
34	252817	Nut, M8 x p1.0	6
35	252345	Clip	2
36	363213	Screw, m5 x 16	1
37	252702	Bolt	3
38	250837	Lub oil cap	1
39	GM47289	Bonnet assembly, head	1
40	GM47279	Plate, baffle	1
41	GM47280	Baffle, breather	1
42	GM47280	Baffle, breather	2
43	GM47296	Diaphragm assembly	1
44	GM35434	Plate, diaphragm	1
45	GM35435	Cover, diaphragm	1
46	GM35436	Diaphragm	1
47	GM35437	Spring, diaphragm	1
50	GM47295	Gasket, bonnet	1
51	GM47287	Cover, bonnet	1
52	GM47288	Gasket, bonnet cover	1
53	363201	Screw, tapping 5 x 10	4
54	363201	Screw, tapping 5 x 10	4
55	GM47298	Screw, 5 x 16	2
56	252684	O-ring 1a p-32.0	1
57	225817	Bolt, M6 x 20	3
58	225429	Bolt, M6 x 75 Plated	6
59	GM47293	Plug, glow	3
60	GM47294	Connector, glow plug	1
61	GM46206	Gasket, liquid	1
62	GM47292	Gasket, manifold	1

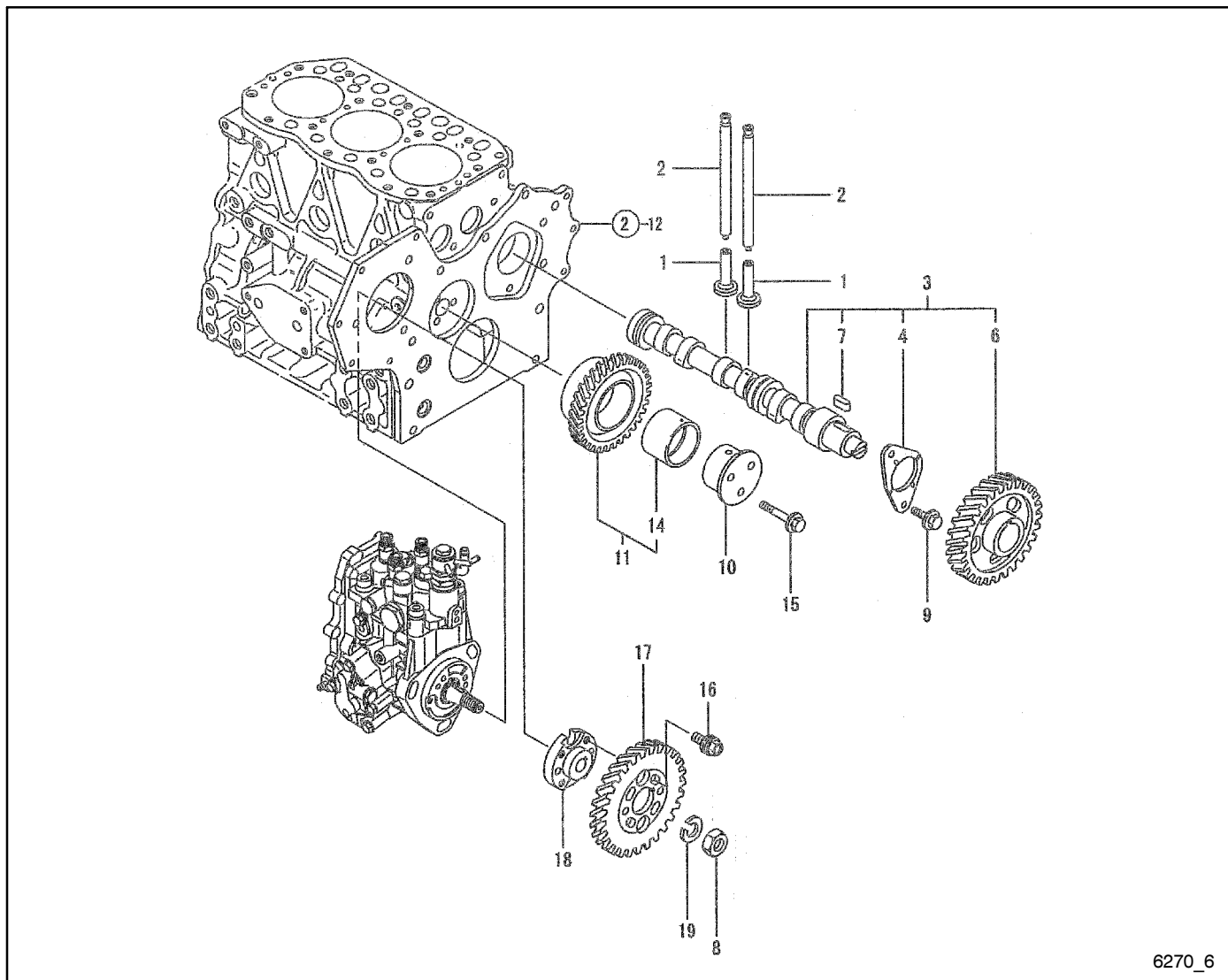
Group 5: Intake Manifold



6270_5

Item	Part Number	Description	Quantity
			Var. No.
			1
1	GM35433	Pipe, breather	1
2	229425	Clamp	2
3	GM35452	Manifold, intake	1
5	GM33685	Gasket, intake manifold	1
6	252697	Bolt	4
7	252707	Bolt	2
8	225778	Gasket	1
9	GM35579	Joint	1
10	252697	Bolt	4
11	225717	Gasket, exhaust manifold	1

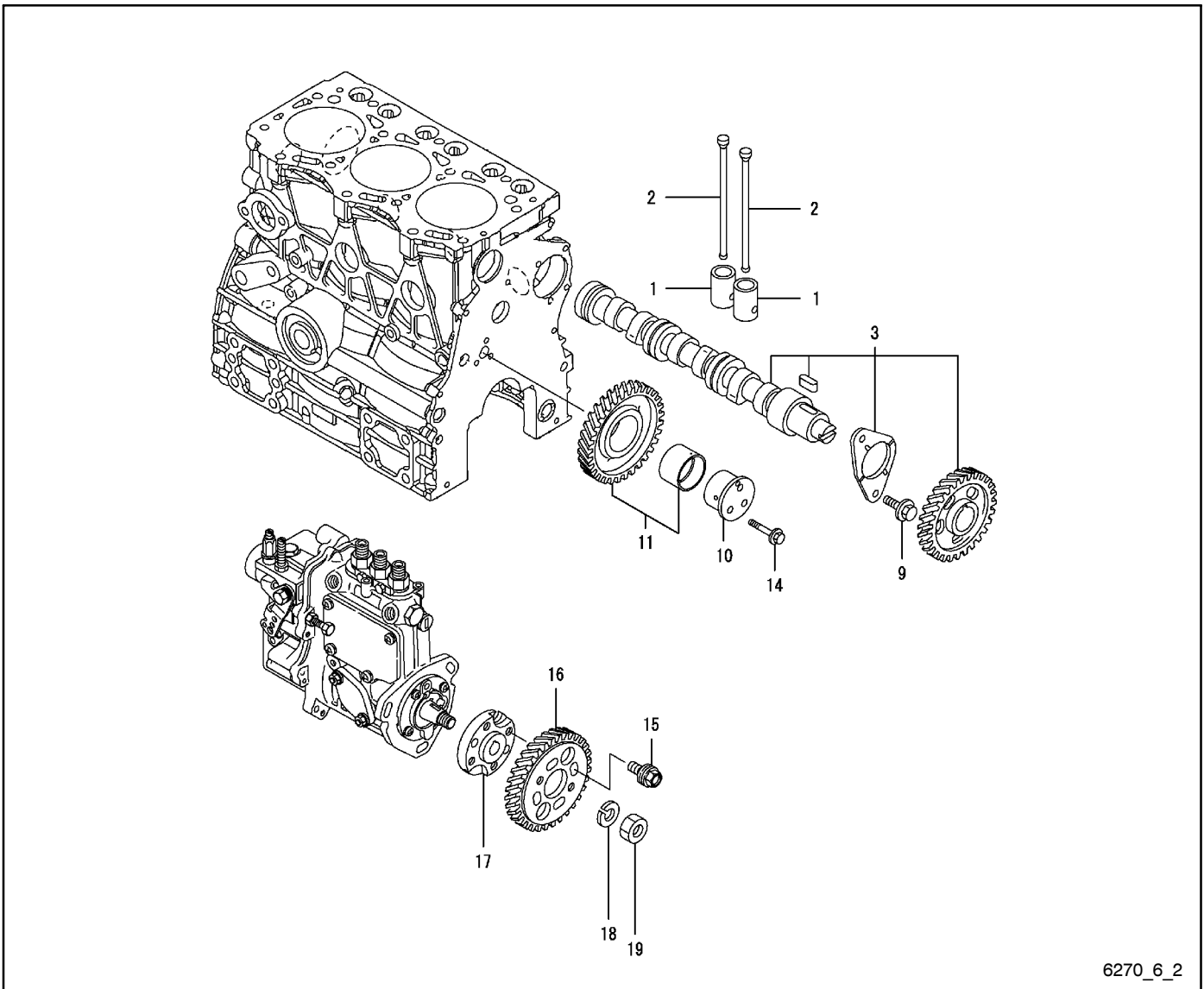
Group 6: Camshaft and Drive Gear



6270_6

Item	Part Number	Description	Quantity
			Var. No.
1	252819	Tappet	6
2	225718	Rod, push	6
3	GM35453	Camshaft assembly	1
4	252804	Metal, thrust	1
6	256587	Gear, camshaft	1
7	252669	Key 7 x 14	1
8	GM35734	Nut, lock M14 plated	1
9	225818	Bolt, M8 x 14	2
10	GM35459	Shaft, idle gear	1
11	GM35461	Gear assembly, idle	1
14	GM35460	Bush, idle gear	1
15	252702	Bolt	3
16	GM19682	Bolt, gear	4
17	GM35462	Gear, pump	1
18	GM35711	Flange	1
19	GM35714	Washer, spring	1

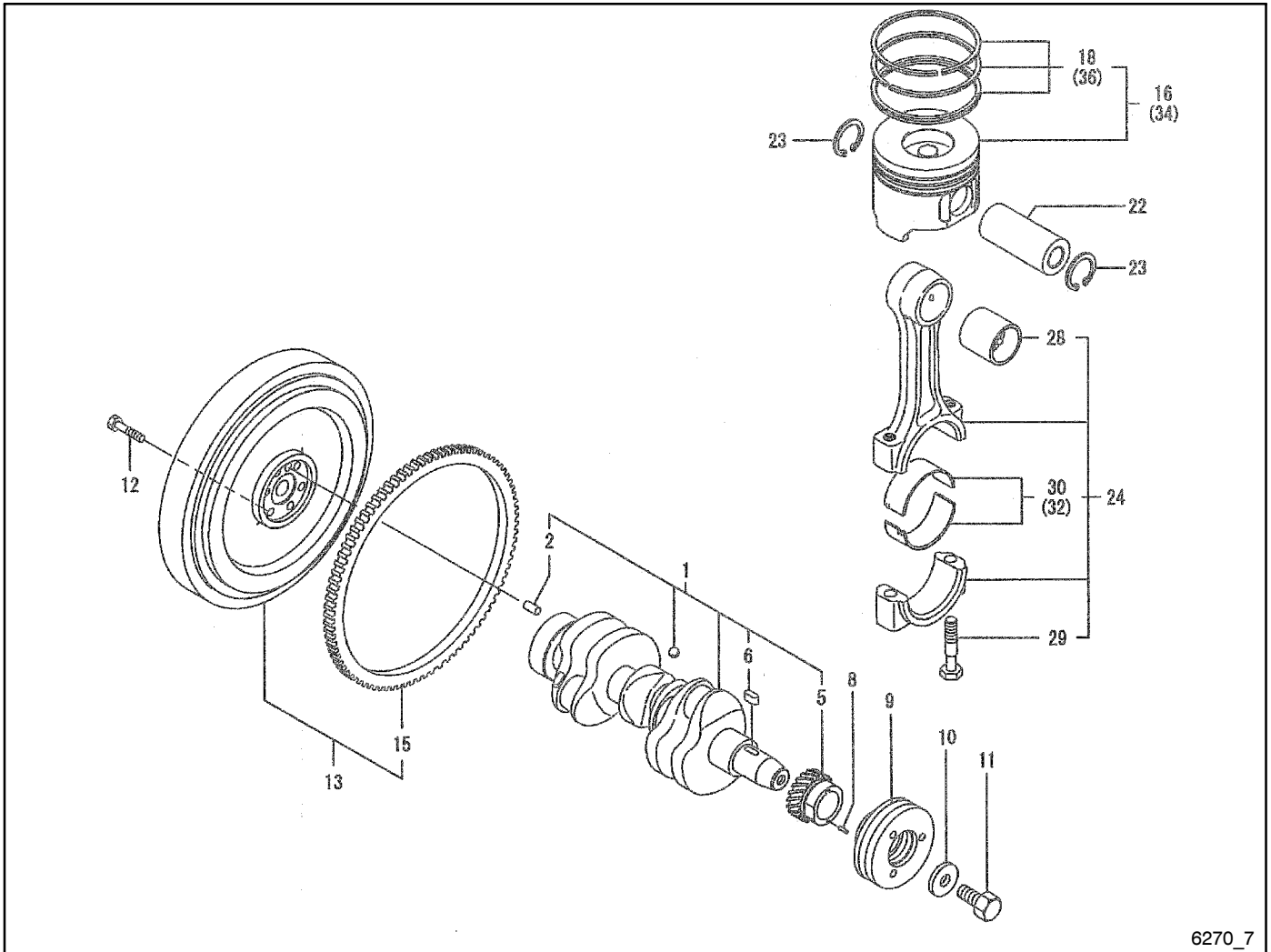
Group 6: Camshaft and Drive Gear, continued



6270_6_2

Item	Part Number	Description	Quantity	
			Var. No.	
			2	
1	363039	Tappet	6	
2	GM47300	Rod, push	6	
3	GM47301	Camshaft assembly	1	
9	225816	Bolt, M6 x 12	2	
10	GM47302	Shaft, idle gear	1	
11	GM47303	Gear assembly, idle	1	
14	GM47306	Bolt, M6 x 35 plated	3	
15	GM19682	Bolt, gear	4	
16	GM47304	Gear, pump	1	
17	GM47305	Flange	1	
18	252666	Washer, spring	1	
19	252725	Nut	1	

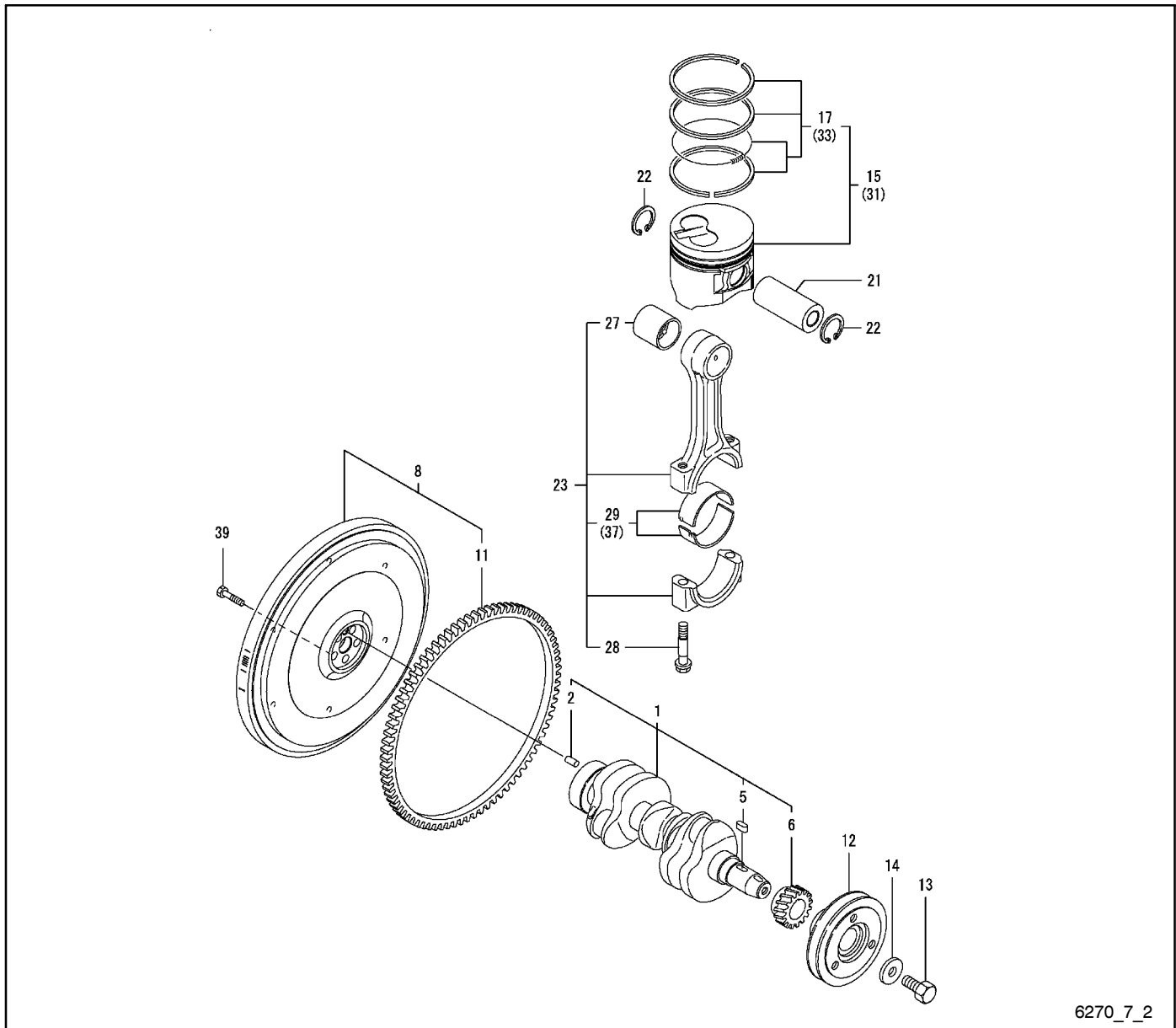
Group 7: Crankshaft and Piston



6270_7

Item	Part Number	Description	Quantity
			Var. No.
1	GM35454	Crankshaft assembly	1
2	256750	Parallel pin 8 x 16	1
5	GM35455	Gear, crankshaft	1
6	252669	Key 7 x 14	1
8	256654	Spring pin	1
9	GM35456	V-pulley, crankshaft	1
10	252937	Washer	1
11	252763	Bolt, V pulley	1
12	252401	Bolt, flywheel	6
13	229117	Flywheel assembly	1
15	252774	Gear, ring	1
16	GM35457	Piston w/ring	3
18	GM35458	Ring set, piston	3
22	225395	Pin, piston	3
23	229738	Circlip	6
24	225838	Rod assembly, connecting	3
28	225726	Bushing piston pin	3
29	225723	Bolt	6
30	225724	Bearing, crankpin	3
32	225725	Crank bearing	3
34	GM35738	Piston w/ring, 0.25 OS	3
36	GM35739	Ring set, 0.25 OS	3

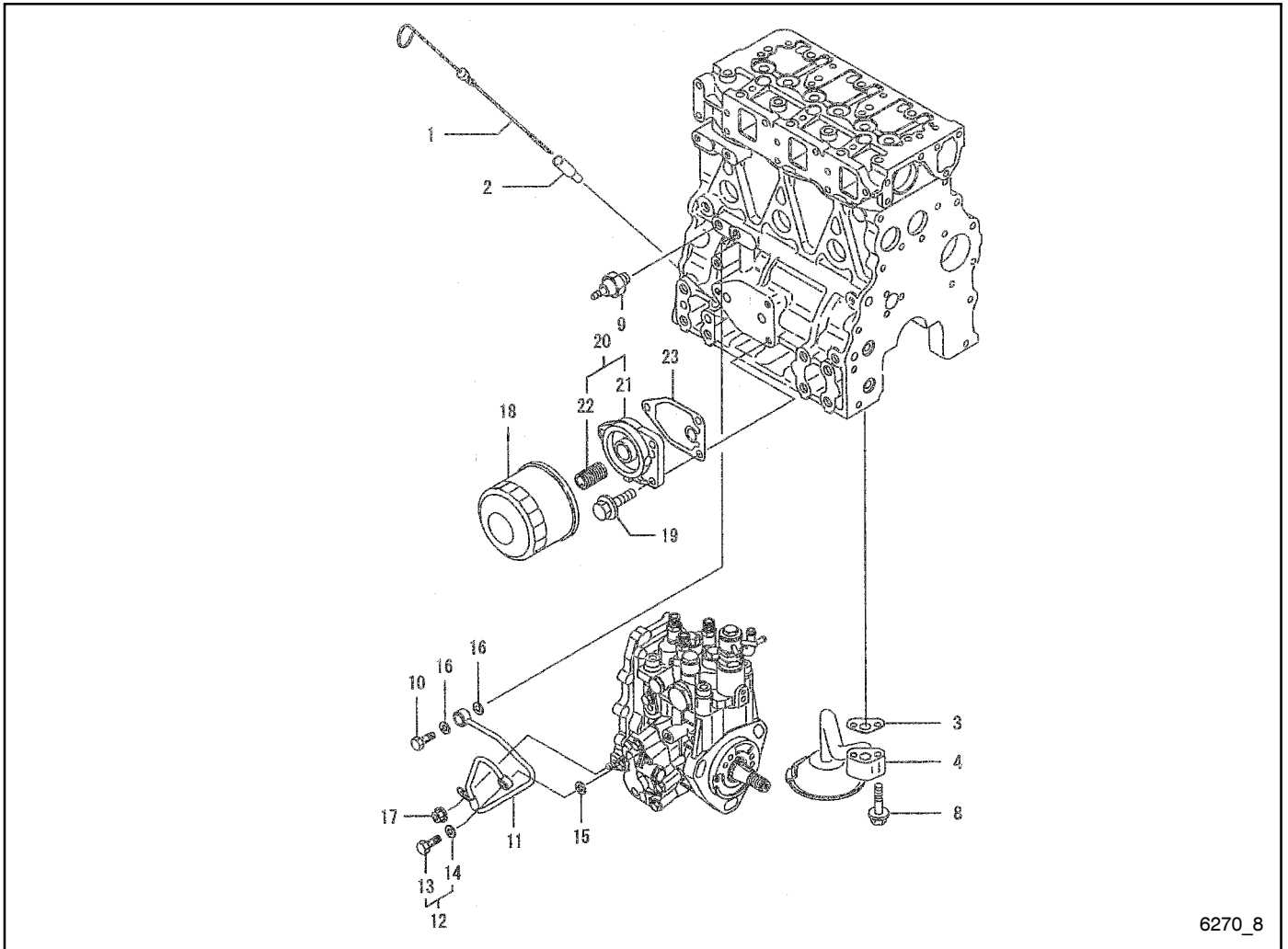
Group 7: Crankshaft and Piston, continued



6270_7_2

Item	Part Number	Description	Quantity		Item	Part Number	Description	Quantity	
				Var. No.					Var. No.
1	GM47309	Crankshaft assembly	1		21	GM47311	Pin, piston	3	
2	256750	Parallel pin 8 x 16	1		22	GM47321	Circlip 22	6	
5	229748	Key, 4 x 12	1		23	GM47315	Rod assembly, connecting	3	
6	GM47307	Gear, crankshaft	1		27	GM47319	Bushing, piston pin	3	
8	GM47320	Flywheel assembly	1		28	GM47316	Bolt, connecting rod	6	
11	363081	Gear, frt. diff. drive	1		29	GM47317	Metal assembly, crank pin	3	
12	GM47308	V-pulley, crankshaft	1		31	GM47314	Piston assembly, 0.25 OS	3	
13	229664	Bolt, M12 x 1.25	1		33	GM47313	Ring set, 0.25 OS	3	
14	229639	Washer	1		37	GM47318	Bearing, pin 0.25 US	3	
15	GM47310	Piston w/ring	3		39	229638	Bolt	5	
17	GM47312	Ring set	3						

Group 8: Lubrication Oil System

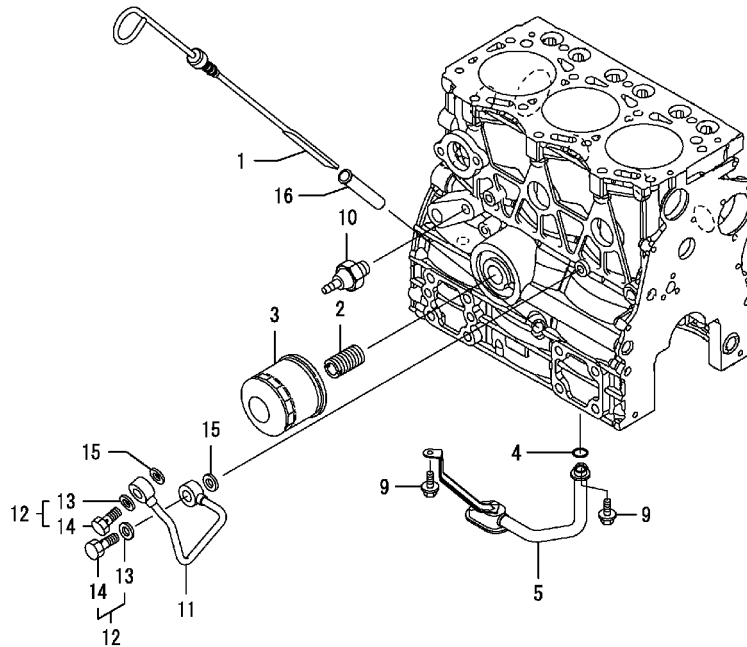


6270_8

Item	Part Number	Description	Quantity
			Var. No.
1	GM35468	Dipstick	1
2	252759	Guide, dipstick	1
3	225775	Gasket	1
4	GM35487	Pipe assembly, oil inlet	1
8	252701	Bolt, M8 x 35	2
9	GM35419	Switch, oil pressure	1
10	252084	Bolt	1
11	GM35471	Pipe assembly, oil	1
12	GM35550	Bolt assembly, joint	1
13	252677	Joint bolt	1
14	252734	Washer 8, seal	1
15	252734	Washer 8, seal	1
16	363452	Washer, seal	2
17	250989	Nut, M6	1
18	252834	Filter, oil*	1
19	252697	Bolt	3
20	GM35469	Bracket assembly, filter	1
21	GM35470	Bracket, filter	1
22	256582	Stud	1
23	225776	Gasket	1

* A Kohler-brand oil filter is available for generator models using this variation. Oil filter GM47465 has 18% more media than filter 252834 for greater contaminant-holding capacity.

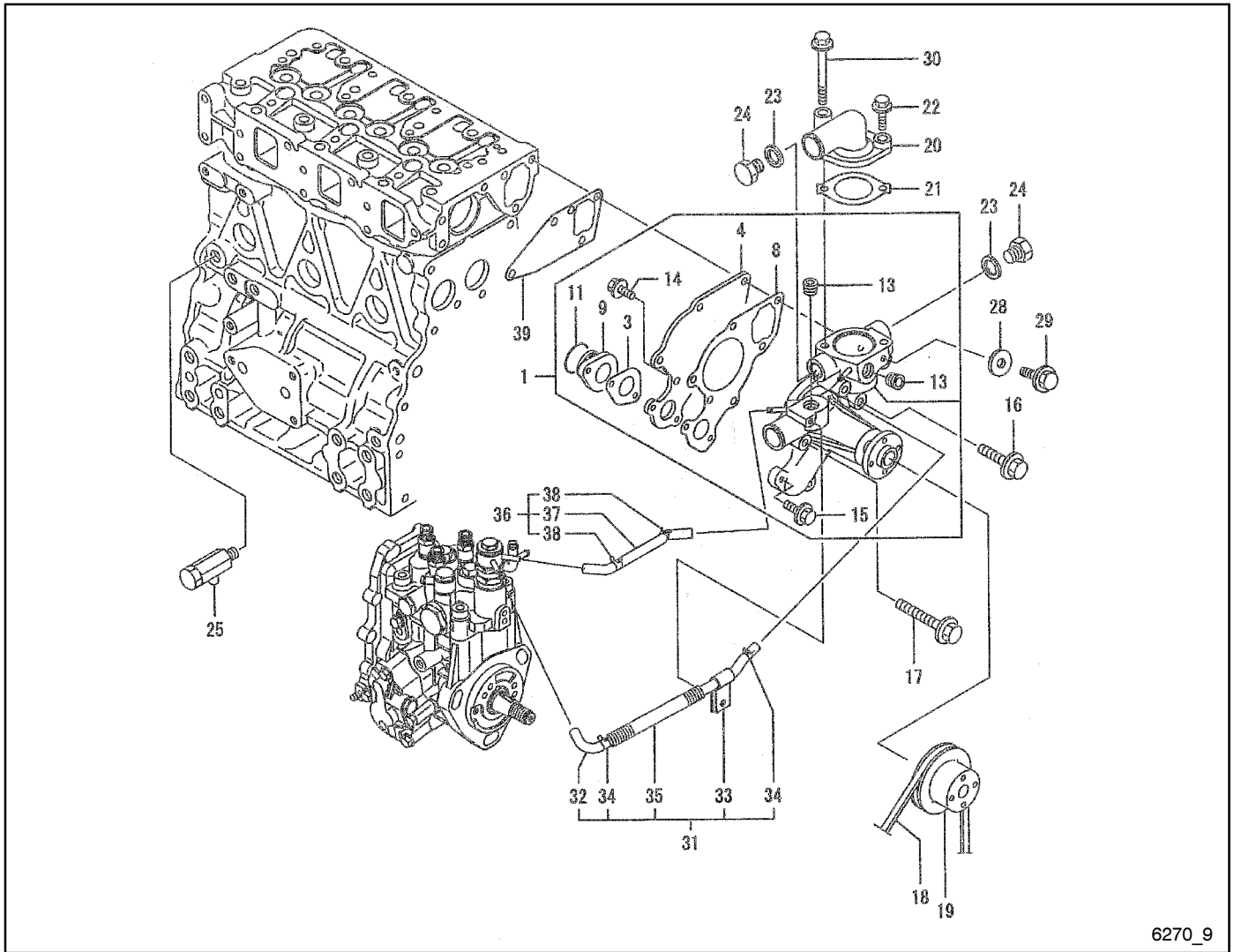
Group 8: Lubrication Oil System, continued



6270_8_2

Item	Part Number	Description	Quantity
			Var. No.
1	GM47323	Dipstick, lub. oil	1
2	256582	Stud	1
3	229678	Filter, oil	1
4	GM47322	O-ring	1
5	GM47324	Pipe assembly, lub. oil	1
9	229498	Bolt, M6 x 10 plated	2
10	GM35419	Switch, oil pressure	1
11	GM47325	Pipe assembly, hydraulic	1
12	GM35550	Bolt assembly, joint	2
13	252734	Washer 8, seal	2
14	252677	Joint bolt 3	2
15	252734	Washer 8, seal	2
16	252759	Guide, dipstick	1

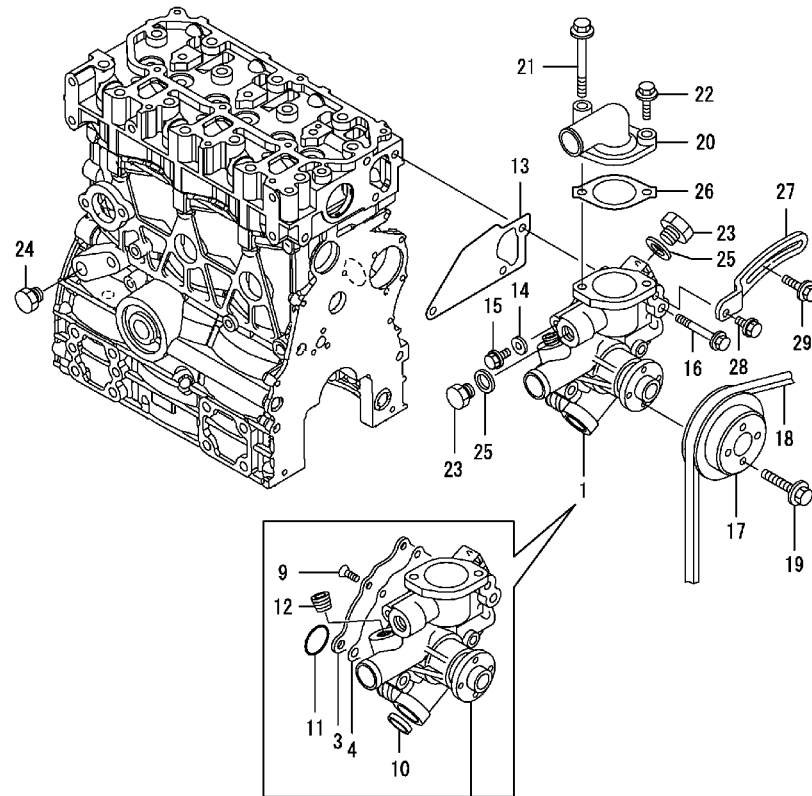
Group 9: Cooling Water System



6270_9

Item	Part Number	Description	Quantity		Item	Part Number	Description	Quantity	
			1	2				1	2
1	GM35472	Pump assembly, water	1	1	23	252773	Packing 16	2	2
3	GM35488	Gasket	1	1	24	252757	Plug M16	2	2
4	GM35489	Plate	1	1	25	256734	Petcock assembly	1	1
8	GM29476	Gasket	1	1	25	225704	Valve	1	1
9	GM35490	Pipe, water pump	1	1	28	250967	Gasket 8, round	1	1
11	252839	O-ring	1	1	29	252695	Bolt, M8 x 12	1	1
13	GM35720	Plug, screw	2	2	30	252705	Bolt	1	1
14	225818	Bolt, M6 x 14 plated	2	2	31	GM35473	Pipe assembly	1	1
15	225817	Bolt, M6 x 20	2	2	32	GM35475	Pipe assembly	1	1
16	252701	Bolt, M8 x 35	1	1	33	GM35477	Clamp	1	1
17	256798	Bolt, M8 x 55 plated	3	3	34	229411	Clamp	2	2
18	225428	V-belt	1		35	GM35482	Tube, corrugated	1	1
18	344920	V-belt (24 V models)		1	36	GM35474	Pipe assembly	1	1
19	252845	V-pulley	1	1	37	GM35476	Pipe, water	1	1
20	229408	Thermostat cover	1	1	38	229411	Clamp	2	2
21	249865	Gasket	1	1	39	GM35580	Gasket	1	1
22	252699	Bolt, M8 x 25 plated	1	1					

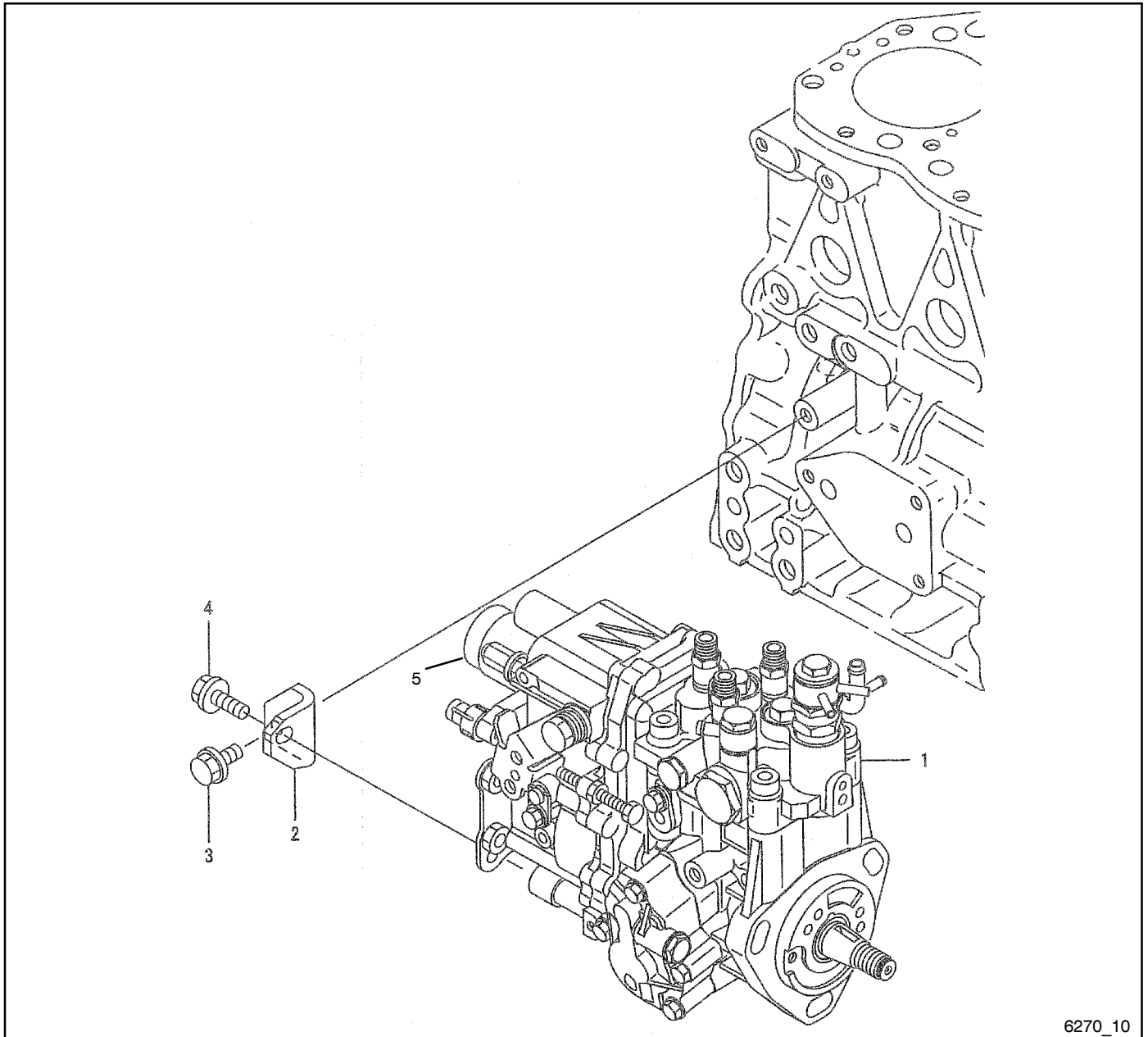
Group 9: Cooling Water System, continued



6270_9_2

Item	Part Number	Description	Quantity	
				Var. No.
1	GM47326	Pump assembly, water	1	3
3	GM47329	Cover	1	
4	GM47328	Gasket	1	
9	GM47333	Screw, M6 x 12	4	
10	229780	Plug	1	
11	GM47330	O-ring	1	
12	GM35704	Plug, drain	1	
13	GM47327	Gasket, water pump	1	
14	250967	Gasket 8, round	1	
15	252695	Bolt, M8 x 12	1	
16	252704	Bolt	3	
17	GM47331	V-pulley, water pump	1	
18	GM47044	Belt, 36 in.	1	
19	225816	Bolt, M6 x 12	4	
20	GM42711	Cover, thermostat	1	
21	252706	Bolt	1	
22	252699	Bolt, M8 x 25 plated	1	
23	252757	Plug m16	2	
24	GM42701	Plug, drain	1	
25	252773	Packing 16	2	
26	249865	Gasket	1	
27	GM47332	Adjuster, belt	1	
28	252697	Bolt	1	
29	GM35491	Bolt	1	

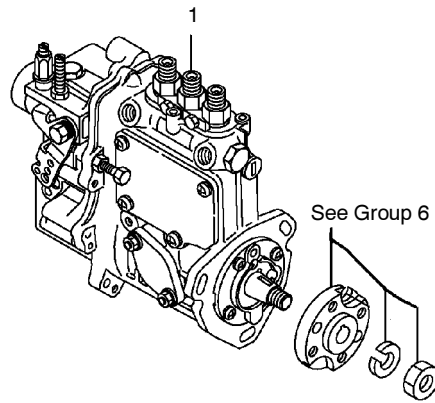
Group 10: Fuel Injection Pump



6270_10

Item	Part Number	Description	Quantity	
			Variation Number 1	Variation Number 2
1	GM35742	Injection pump assembly	1	1
2	GM35478	Bracket, pump	1	1
3	252696	Bolt, M8 x 16	1	1
4	252697	Bolt	1	1
5	344746	Solenoid (24 V models)		1

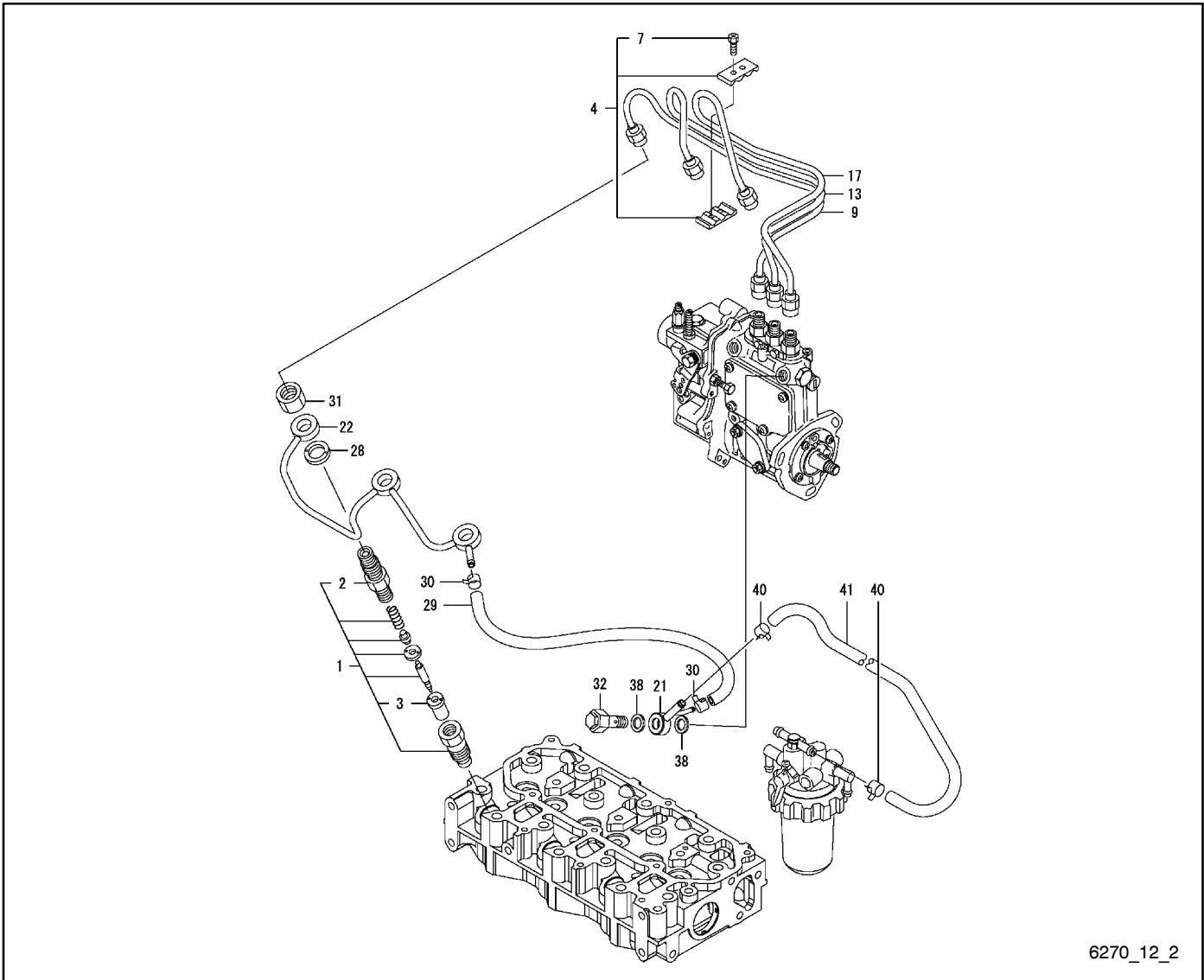
Group 10: Fuel Injection Pump, continued



6270_10_2

Item	Part Number	Description	Quantity
			Var. No.
1	GM47334	Pump assembly, fuel injection	3
			1

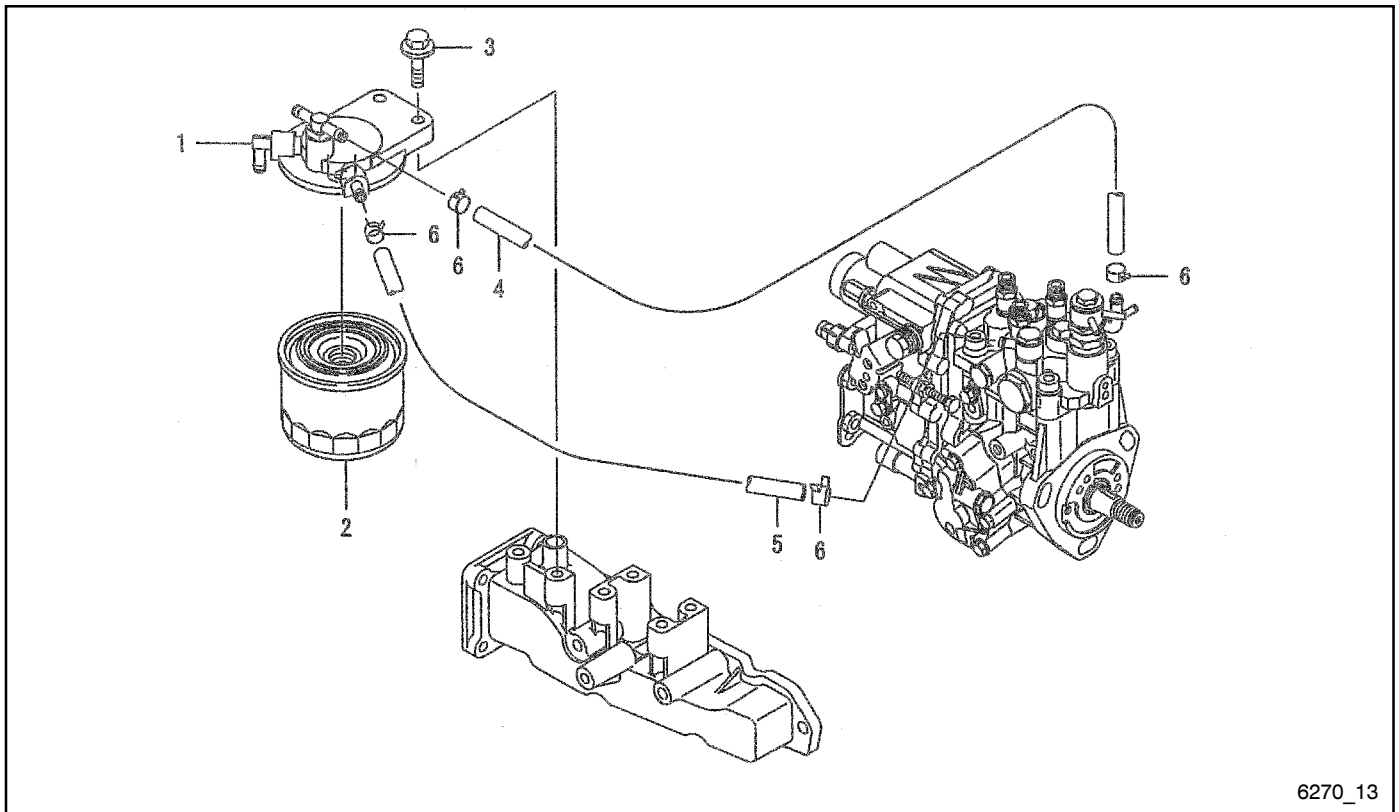
Group 12: Fuel Injection Valve, continued



6270_12_2

Item	Part Number	Description	Quantity	
				Var. No.
1	GM47337	Valve assembly, injection	2	
2	GM47336	Holder, nozzle	3	
3	GM47338	Nozzle assembly	3	
4	256774	Clamp assembly, line	1	
7	225418	Bolt, M4 x 14 hex socket	2	
9	GM47340	Pipe, fuel injection	1	
13	GM47341	Pipe, fuel injection	1	
17	GM47342	Pipe, fuel injection	1	
21	225406	Joint	1	
22	GM47339	Pipe assembly, return	1	
28	GM47345	Gasket, return	3	
29	GM47343	Pipe, fuel oil	1	
30	249843	Hose clamp	2	
31	229662	Nut	3	
32	GM47344	Valve assembly, check	1	
38	225424	Seal washer 12S	2	
40	—	Clamp (see Group 103)	2	
41	—	Fuel line (see Group 103)	1	

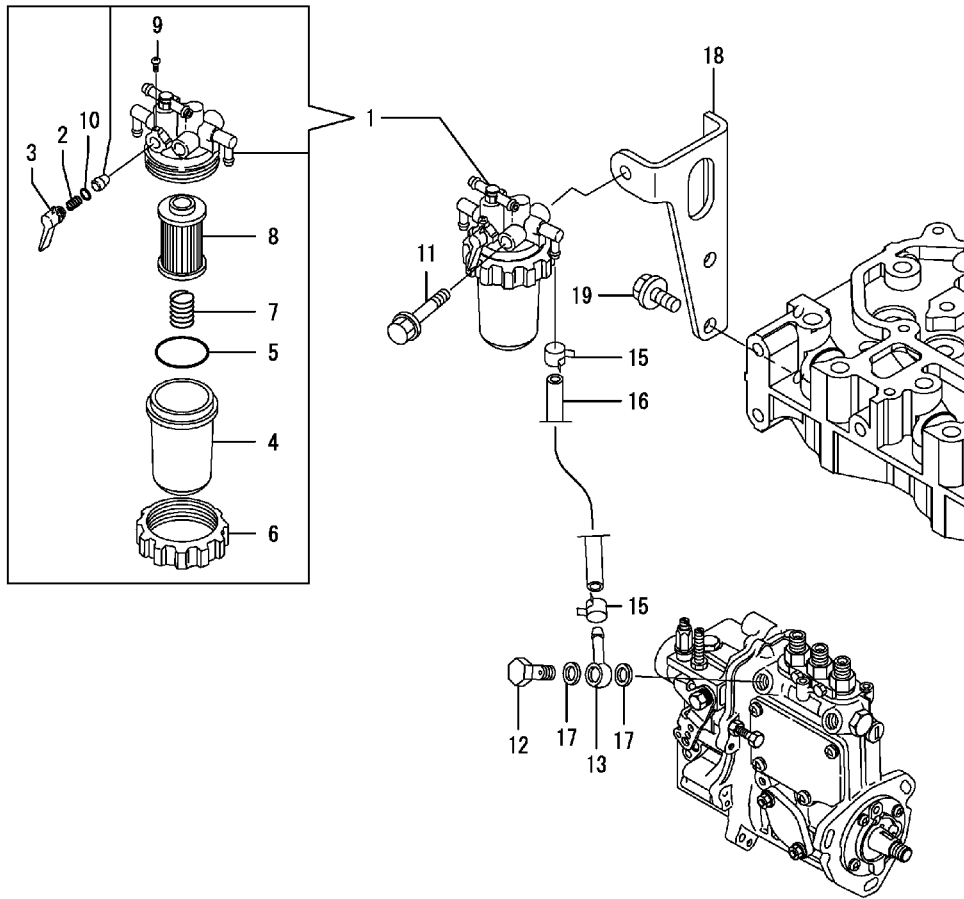
Group 13: Fuel Line and Filter



6270_13

Item	Part Number	Description	Quantity
			Var. No.
1	GM35541	Bracket, filter	1
2	GM32359	Filter, fuel	1
3	225819	Bolt M8 x 30 plated	2
4	X-386-93	Pipe, fuel oil	1
5	X-386-135	Pipe, fuel oil	1
6	252670	Clamp	4

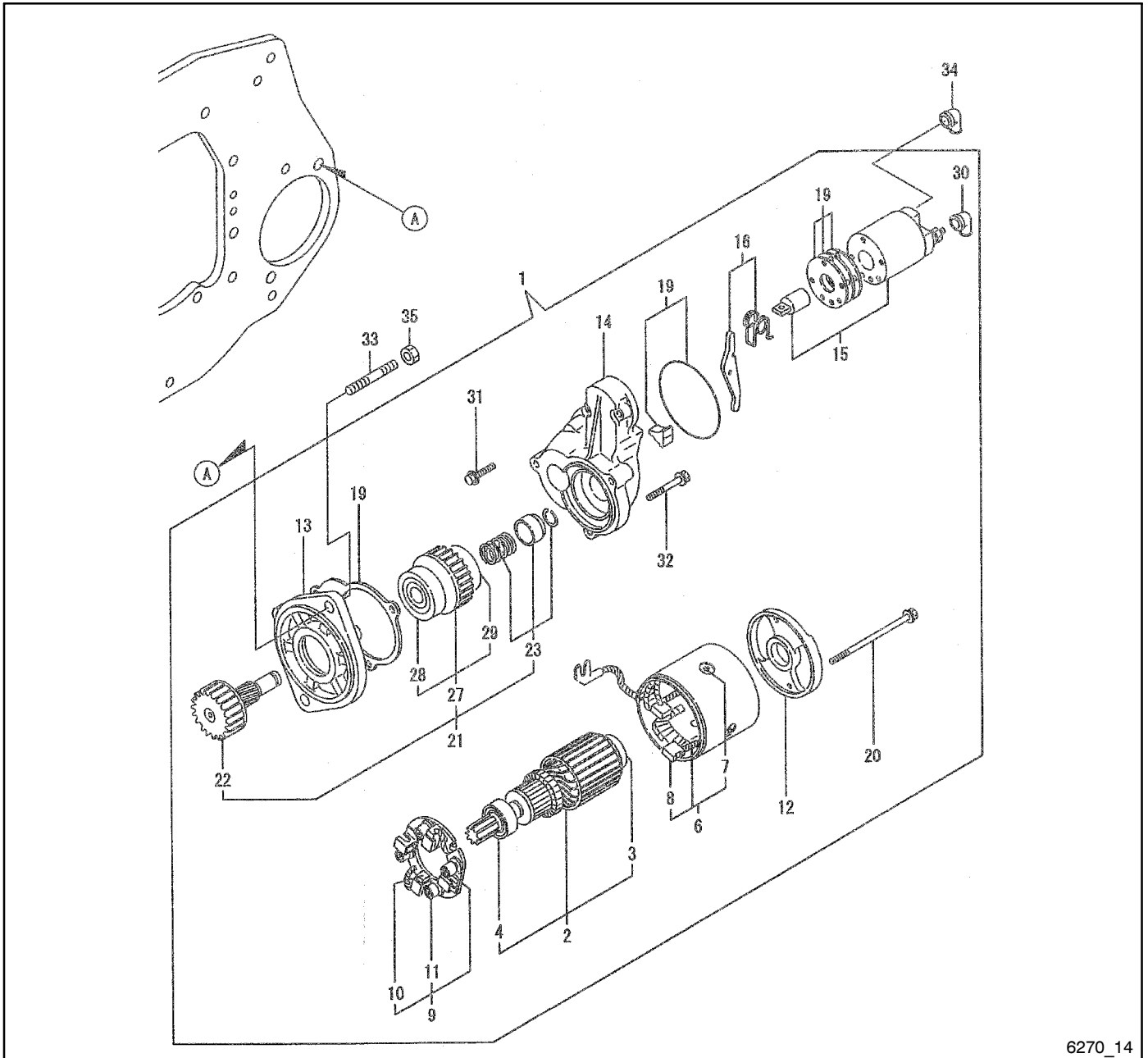
Group 13: Fuel Line and Filter, continued



6270_13_2

Item	Part Number	Description	Quantity		Item	Part Number	Description	Quantity	
				Var. No.					Var. No.
1	GM47042	Filter assembly, fuel	2		10	225811	O-ring	2	
2	GM47346	Spring, taper valve	1		11	229758	Bolt w/washer, M8 x 70	1	
3	GM47349	Lever	1		12	229552	Bolt, pipe joint	1	
4	229709	Cup, strainer	1		13	256567	Joint 12, pipe	1	
5	229550	O-ring	1		15	—	Clamp (see Group 103)	2	
6	250821	Retainer	1		16	—	Fuel line (see Group 103)	1	
7	229708	Spring	1		17	225424	Seal washer, 12S	2	
8	GM10979	Element, fuel filter	1		18	GM47348	Bracket, filter	1	
9	GM47347	Screw, M4	1		19	252696	Bolt, M8 x 16	2	

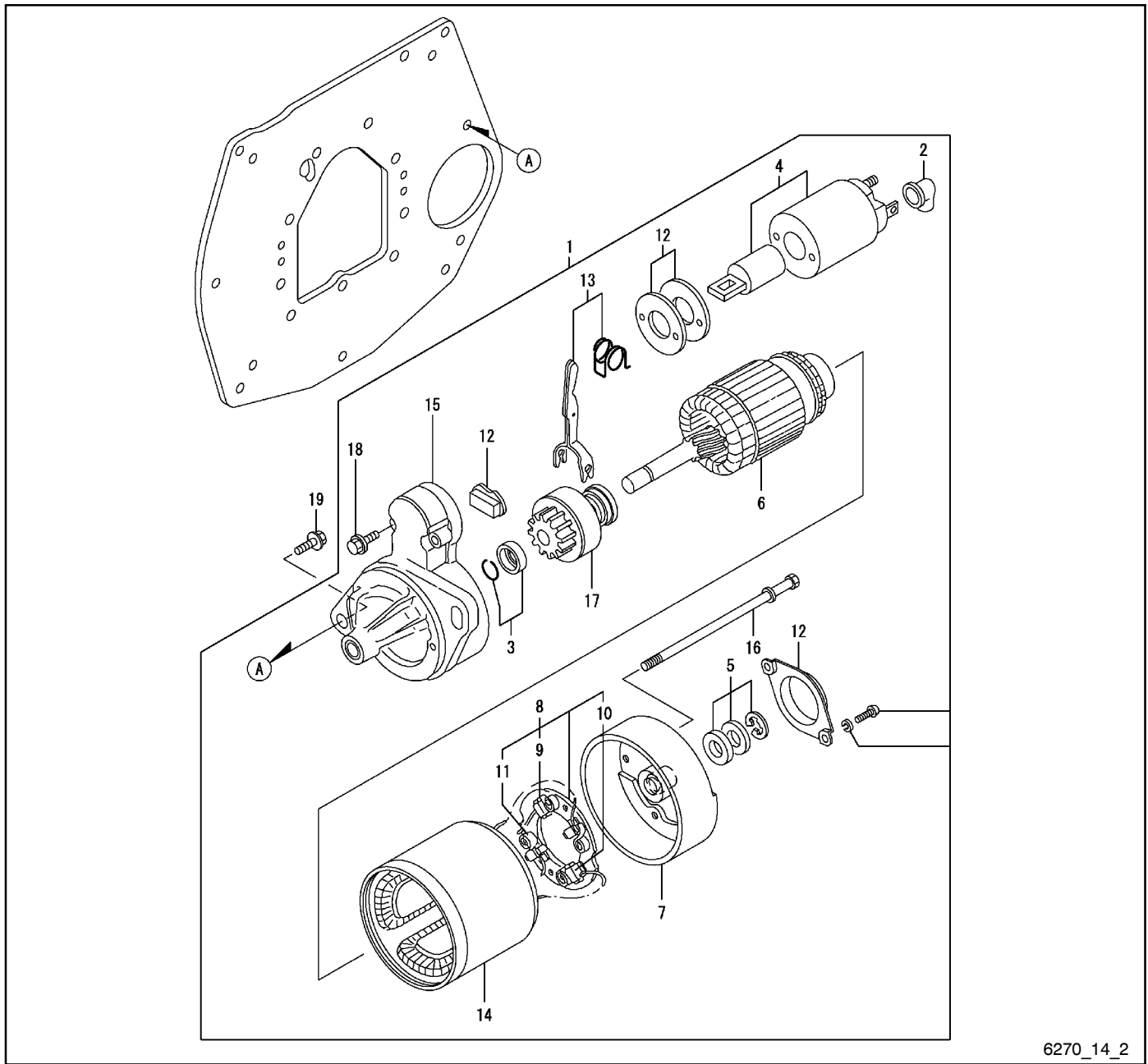
Group 14: Starting Motor



6270_14

Item	Part Number	Description	Quantity		Item	Part Number	Description	Quantity	
			1	2				1	2
1	344743-P	Starter, 12 V	1		19	225909	Dust cover	1	
1	GM39020	Starter, 24 V		1	20	225910	Through bolt	2	
2	225895	Armature assembly	1		21	225911	Pinion assembly	1	
3	GM35772	Ball bearing	1		22	225912	Pinion shaft	1	
4	GM35769	Ball bearing	1		23	225913	Pinion stopper set	1	
6	225898	Field coil assembly	1		27	GM35770	Clutch assembly	1	
7	225899	Screw	4		28	GM35771	Ball bearing	1	
8	225900	Brush (+)	2		29	GM35774	Ball bearing	1	
9	225901	Holder assembly	1		30	225917	Cover	1	
10	225902	Brush (-)	2		31	225920	Bolt	2	
11	225903	Brush spring	4		32	225921	Bolt	3	
12	225904	Rear cover	1		33	GM35516	Stud, starter	2	
13	225905	Gear housing assembly	1		34	252481	Cover	1	
14	225906	Center housing	1		35	252725	Nut	2	
15	225907	Switch, magnetic	1						
16	225908	Shift lever set	1						

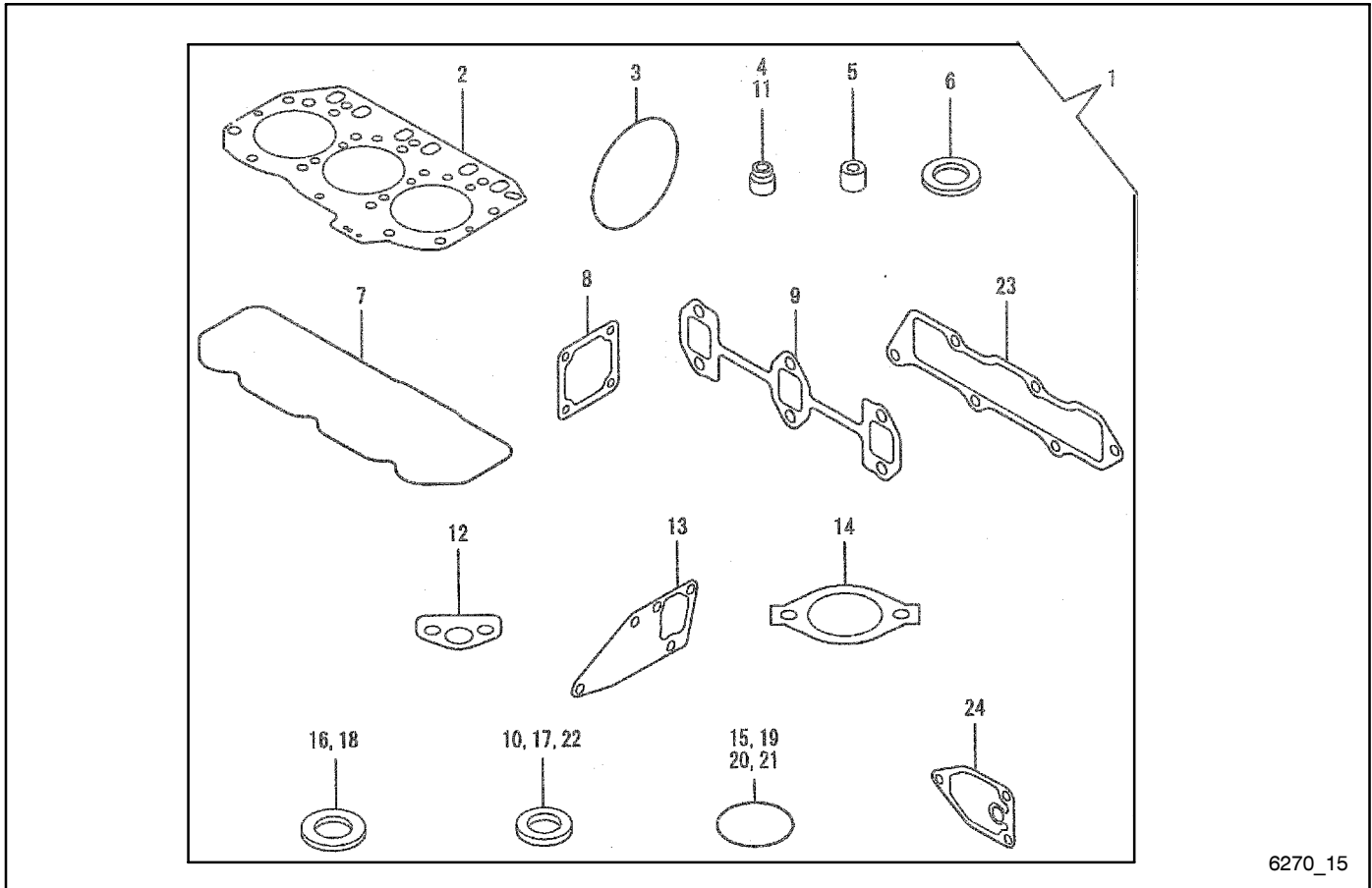
Group 14: Starting Motor, continued



6270_14_2

Item	Part Number	Description	Quantity		Item	Part Number	Description	Quantity	
				Var. No.					Var. No.
1	229704	Starter	3		11	363009	Spring, brush	4	
2	363417	Cover terminal	1		12	363006	Cover kit, dust	1	
3	252630	Stopper set, pinion	1		13	363007	Shift lever kit	1	
4	GM47353	Switch, magnet	1		14	363092	Yoke assy.	1	
5	252631	Washer set, thrust	1		15	363078	Case, gear	1	
6	363004	Armature	1		16	363093	Through bolt	2	
7	363005	Cover assy., rear	1		17	363079	Pinion	1	
8	GM47351	Holder assembly, brush	1		18	363010	Bolt, M6 x 37	2	
9	363008	Brush (-)	2		19	225820	Bolt, M10 x 30 plated	2	
10	GM47352	Brush (+)	1		19	229768	Bolt, M10 x 30	2	

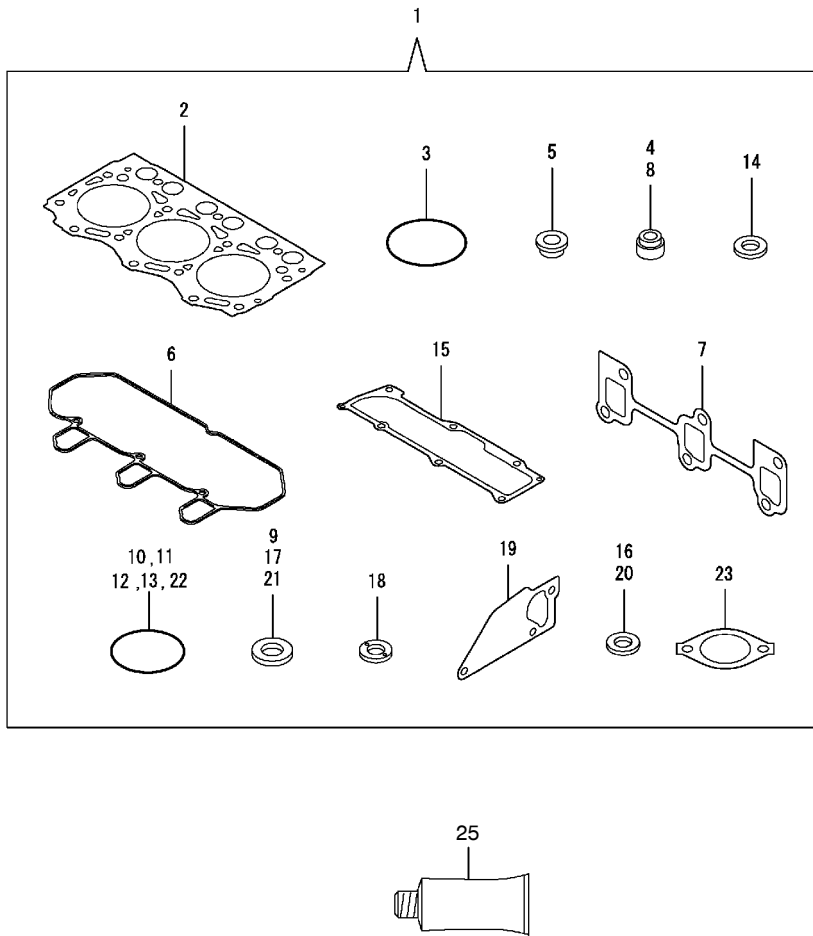
Group 15: Gasket Set



6270_15

Item	Part Number	Description	Quantity
			Var. No.
1	GM35741	Gasket set	1
2	GM33836	Gasket, cylinder head	1
3	252764	O-ring, pump	1
4	250844	Valve seal	3
5	GM35450	Protector, nozzle	3
6	252744	Seat	3
7	GM35445	Gasket, bonnet	1
8	225778	Gasket	1
9	225717	Gasket, exhaust man	1
10	225425	Seal washer	1
11	225766	Seal, valve stem	3
12	225775	Gasket	1
13	GM35580	Gasket	1
14	249865	Gasket	1
15	GM35421	O-ring	4
16	250967	Gasket 8, round	1
17	252734	Washer 8, seal	2
18	GM35517	Gasket	2
19	250801	O ring	3
20	252684	O-ring	2
21	256796	O-ring	1
22	363452	Washer, seal	2
23	GM33685	Gasket, intake manifold	1
24	225776	Gasket	1

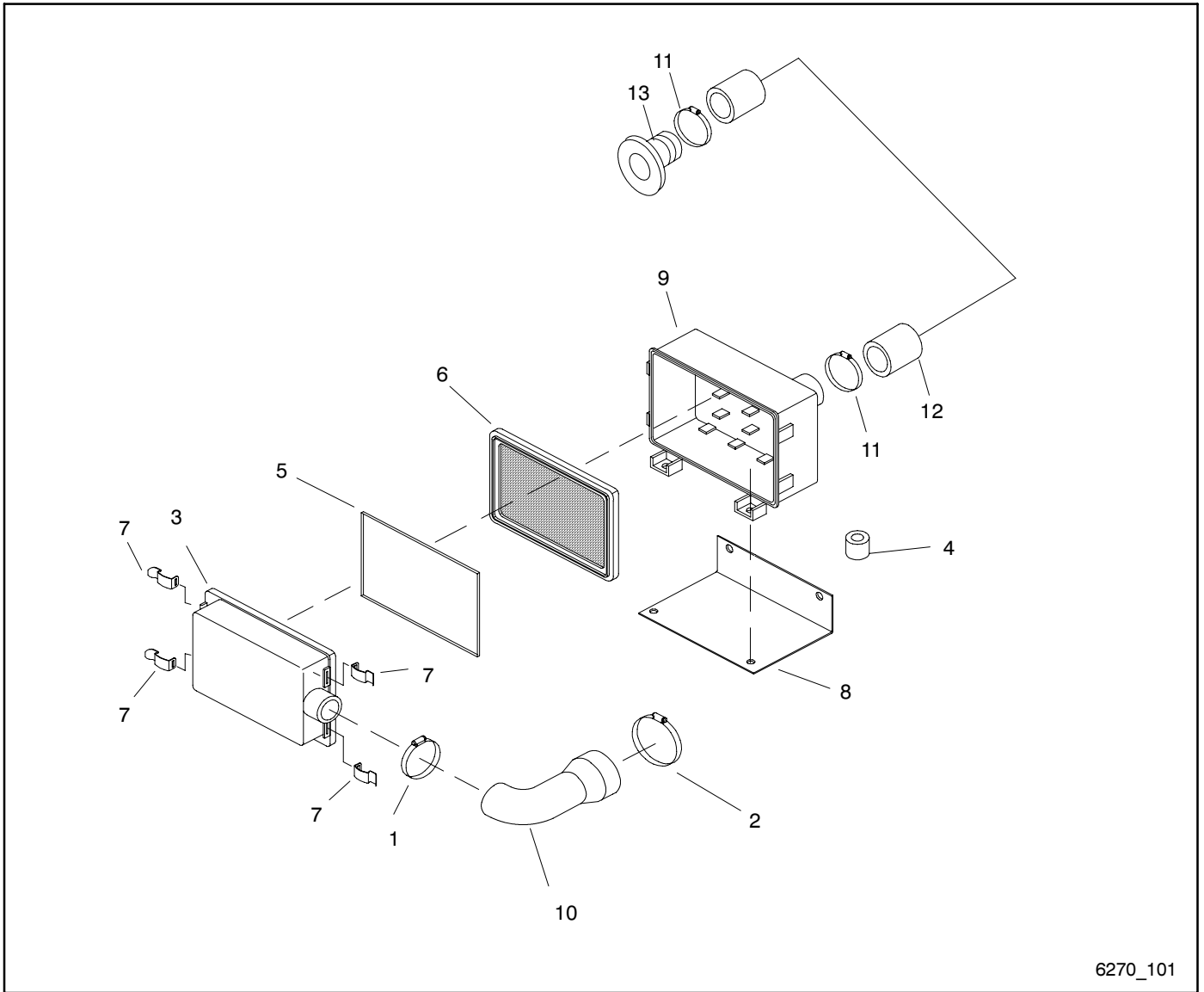
Group 15: Gasket Set, continued



6270_15_2

Item	Part Number	Description	Quantity		Item	Part Number	Description	Quantity	
				Var. No.					Var. No.
1	GM47354	Gasket set	1		13	GM47264	O-ring	3	
2	GM47255	Gasket, cylinder head	1		14	229624	Gasket	6	
3	252764	O-ring, fuel injection pump	1		15	GM47288	Gasket, bonnet cover	1	
4	GM35424	Seal, valve stem	3		16	252773	Packing 16	2	
5	GM47297	Protector, nozzle	3		17	225424	Seal washer	4	
6	GM47295	Gasket, bonnet	1		18	GM47345	Gasket, return	3	
7	GM47292	Gasket, manifold	1		19	GM47327	Gasket, water pump	1	
8	GM35425	Seal, valve stem	3		20	250967	Gasket, round	1	
9	252734	Washer 8, seal	4		21	363448	Washer, seal 16S	1	
10	252684	O-ring	2		22	256796	O-ring	1	
11	GM47322	O-ring	1		23	249865	Gasket	1	
12	GM47260	O-ring	1		25	GM46206	Gasket, liquid	1	

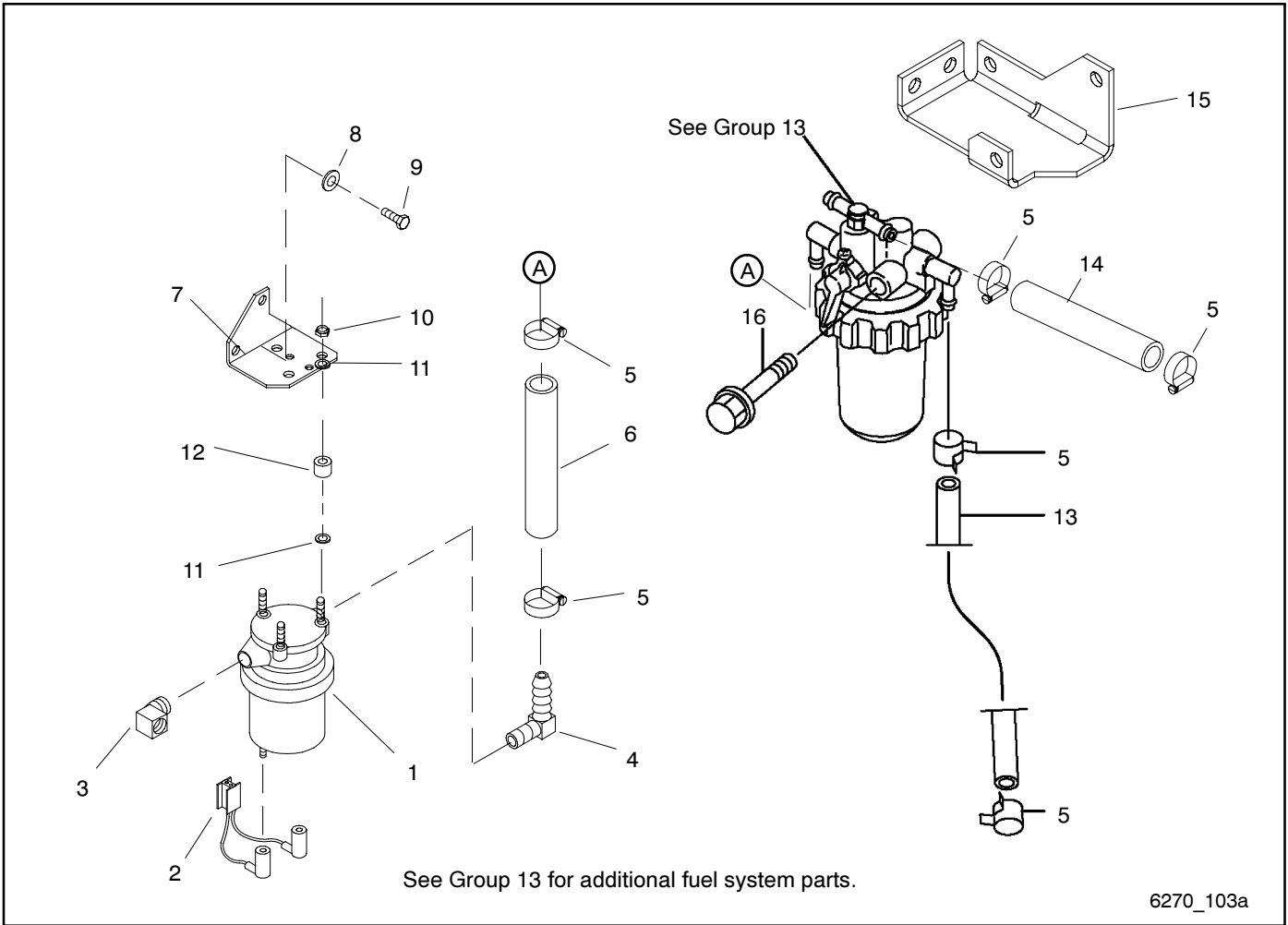
Group 101: Air Intake



6270_101

Item	Part Number	Description	Quantity	
			Variation Number GR1	Variation Number 2
1	X-426-19	Clamp, hose, 1/2 in.	1	1
2	X-426-6	Clamp, hose, 1.56/2.5 in.	1	1
3	278856	Cover, plastic	1	1
4	X-400-28	Spacer, 0.282 ID x 0.5 OD x 0.531 in.	1	1
5	278857	Filter, air	1	1
6	278858	Element, air cleaner	1	1
7	278862	Clip, air cleaner	4	4
8	GM31177-BLK	Bracket, air cleaner mounting	1	
8	GM37433	Bracket, air cleaner mounting		1
9	278855	Base, air cleaner	1	1
10	344224	Hose, molded air intake, 1.29 in. ID	1	
10	GM37434	Hose, molded air intake		1
11	X-426-8	Clamp, hose, 0.81/1.75 in.	2	2
12	359585	Duct	1	1
13	359476	Connector, hose	1	1

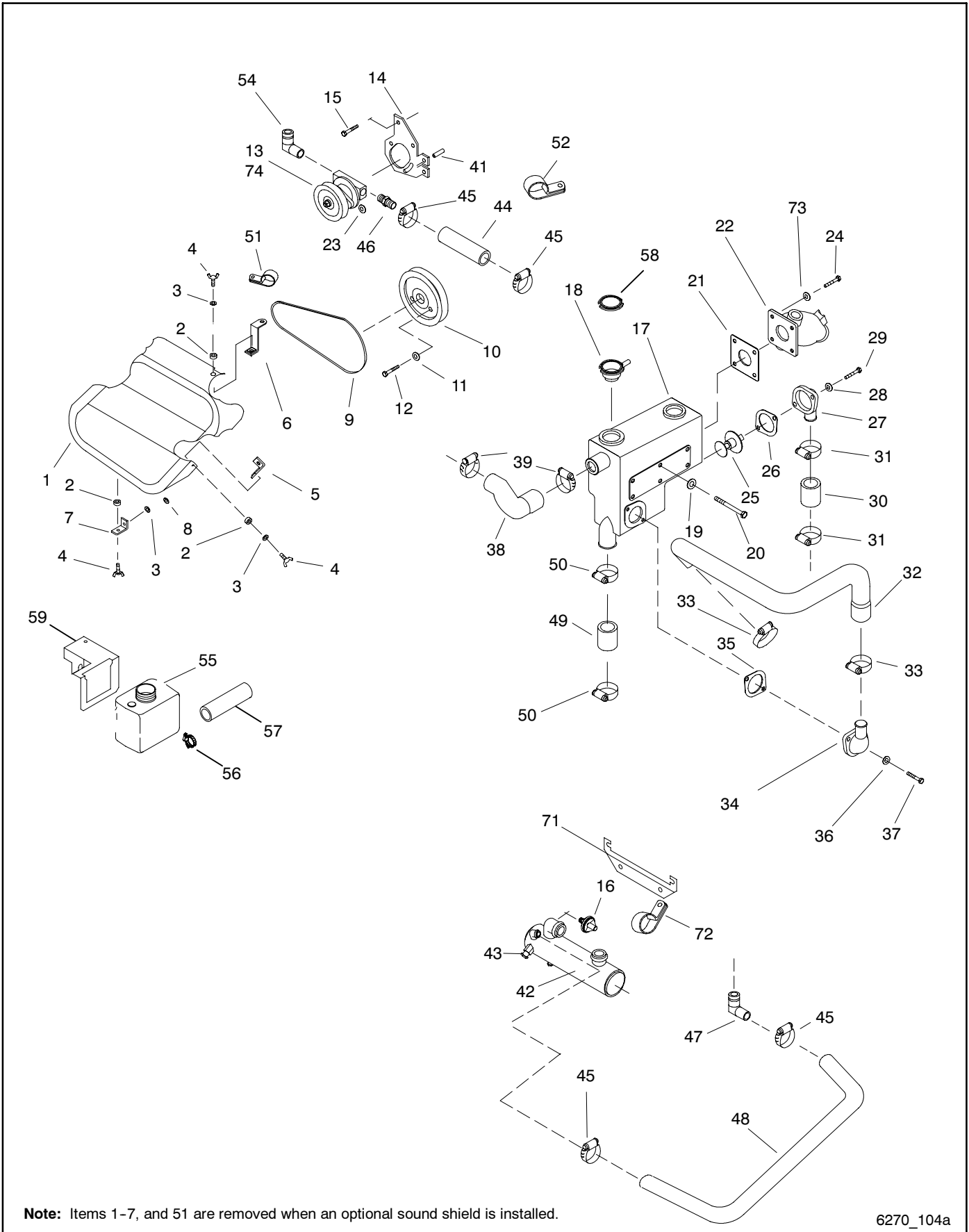
Group 103: Fuel System



Group 103: Fuel System

Item	Part Number	Description	Quantity		
			Variation Number		
			GR2	GR9	3
1	229051	Pump, fuel	1		1
1	344740	Pump, fuel		1	
2	229168	Lead assembly	1	1	1
3	X-555-1	Elbow, street, 1/4 x 1/4	1	1	1
4	X-391-25	Connector, 90 deg. 5/16 in. ID hose	1	1	1
5	X-426-9	Clamp, hose, .25/.70 in.	2	2	6
6	X-386-101	Fuel line, flexible	1	1	
6	X-386-79	Hose			1
7	229065	Bracket, fuel pump	1	1	
7	GM38396	Bracket, fuel pump			1
8	M125A-12-80	Washer	2	2	
9	M933-12020-60	Bolt, hex head	2	2	
10	X-101-25	Nut, hex elastic stop	3	3	3
11	X-25-40	Washer	6	6	
12	X-284-39	Grommet	3	3	3
13	X-386-135	Line, flex fuel			1
14	X-386-79	Hose			1
15	GM38410	Bracket, fuel filter mounting			1
16	M931-08070-60	Screw, hex cap			1

Group 104: Cooling System



Note: Items 1-7, and 51 are removed when an optional sound shield is installed.

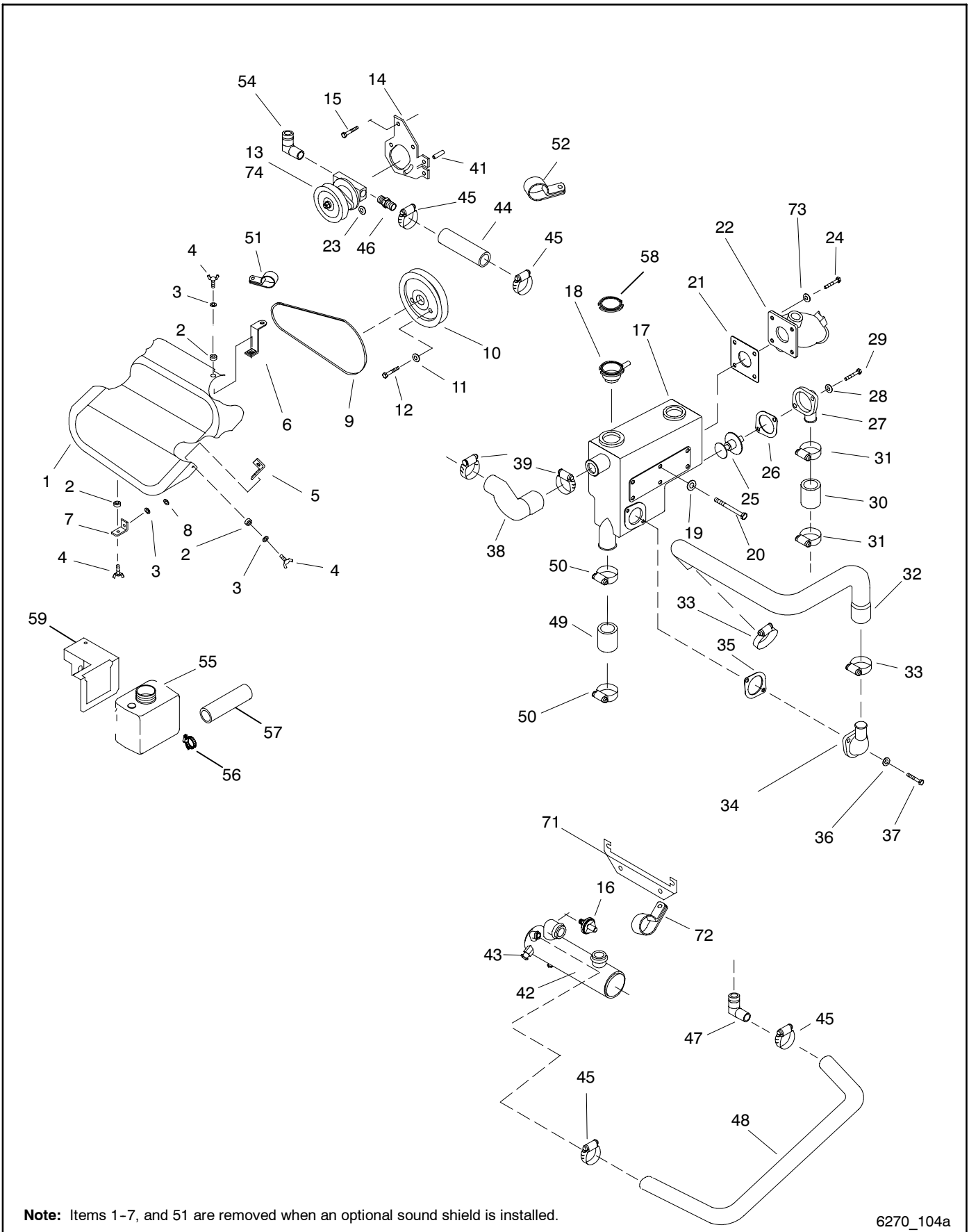
6270_104a

Group 104: Cooling System

Item	Part Number	Description	Quantity		
			Variation Number		
			GR3	GR10	3
1	GM30592	Guard, belt	1	1	
1	GM38459	Guard, belt			1
2	X-284-39	Grommet	3	3	3
3	X-25-40	Washer, plain	3	3	
4	229330	Screw, wing	3	3	3
5	GM30573	Bracket, belt guard	1		
5	GM33857	Bracket, belt guard		1	
5	GM38461	Bracket, belt guard			1
6	GM30571	Bracket, belt guard	1		
6	GM33855	Bracket, belt guard		1	
6	GM38462	Bracket, belt guard			1
7	GM30572	Bracket, belt guard	1		
7	GM33856	Bracket, belt guard		1	
7	GM38460	Bracket, belt guard			1
8	X-400-170	Spacer, 0.344 ID x 0.625 OD x 0.143 in.	1	1	
9	229125	V-Belt, 27 in.	1	1	
9	GM13660	V-Belt, 25.5 in.			1
10	GM30244	Pulley, pump drive	1	1	
10	GM42280	Pulley, pump drive			1
11	M125A-10-80	Washer, plain	3	3	3
12	M933-10025-60	Screw, HC M10-1.50	3	3	3
13	GM46963	Service Kit, Seawater Pump* (before serial number 2104903)	1	1	
13	GM46964	Service Kit, Seawater Pump* (before serial number 2104903)			1
13	-	Pump, seawater (serial number 2104903 and later, see item 74)	1	1	1
14	GM30243	Bracket, seawater pump	1	1	
14	GM38443	Bracket, seawater pump			1
15	M931-08060-60	Screw, HC	2	2	
16	GM30263	Switch, pressure	1	1	1
17	260115	Manifold, exhaust	1	1	
17	GM37631	Manifold, exhaust			1
18	241311	Neck	1	1	1
19	M125A-08-80	Washer	6	6	6
20	M931-08120-60	Screw, hex head cap	6	6	
20	M931-08100-60	Screw, hex head cap			2
20	M931-08140-60	Screw, hex head cap			4
21	249905	Gasket, exhaust	1	1	1
22	229063	Tube, mixing	1	1	1
23	X-25-85	Washer, 5/16	2	2	2
23	M125A-08-80	Washer, plain			4
24	X-125-5	Screw, 5/16-18 x 1	4	4	
24	M933-08025-60	Screw, hex cap			4
25	GM47556	Thermostat	1	1	1
26	229963	Gasket, water outlet	1	1	1
27	229064	Cover, thermostat	1	1	1
28	X-25-85	Washer	2	2	
28	M125A-08-80	Washer, plain			2
29	X-125-31	Screw, 5/16-8 x 0.875	2	2	
29	M933-08020-60	Screw, hex cap			2
30	229232	Hose, coolant	1	1	
30	GM37677	Hose, molded coolant			1
30	GM12028	Sleeving, expandable (not shown)			1
31	X-426-8	Clamp, hose, 1 15/16 x 1 3/16	2	2	2
32	229057	Hose, molded coolant	1	1	
32	GM37407	Hose, molded coolant			1
33	X-426-8	Clamp, hose, 1 15/16 x 1 3/16	2	2	2
34	229064	Cover, thermostat	1	1	1
35	229963	Gasket, water outlet	1	1	1
36	X-25-85	Washer	2	2	
36	M125A-08-80	Washer, plain			2
37	X-125-31	Screw, 5/16-8 x 0.875	2	2	
37	M933-08020-60	Screw, hex cap			2
38	GM30020	Hose, molded coolant	1	1	
38	344880	Hose, molded coolant, 1.10 in. ID			1
39	X-426-8	Clamp, hose, 1 15/16 x 1 3/16	2	2	2
41	X-400-104	Spacer, 0.375 ID x 0.75 ID x 0.5 in.	1	1	
41	X-400-262	Spacer, 6.60 ID x 12.70 OD x 8.38 L			2
41	X-400-263	Spacer, 6.60 ID x 12.70 OD x 12.08 L			1
41	X-400-264	Spacer, 8.74 ID x 18.55 OD x 16.08 L			1

* Seawater pump service kit includes pump GM46936 (item 74), item 14 bracket, and hardware.

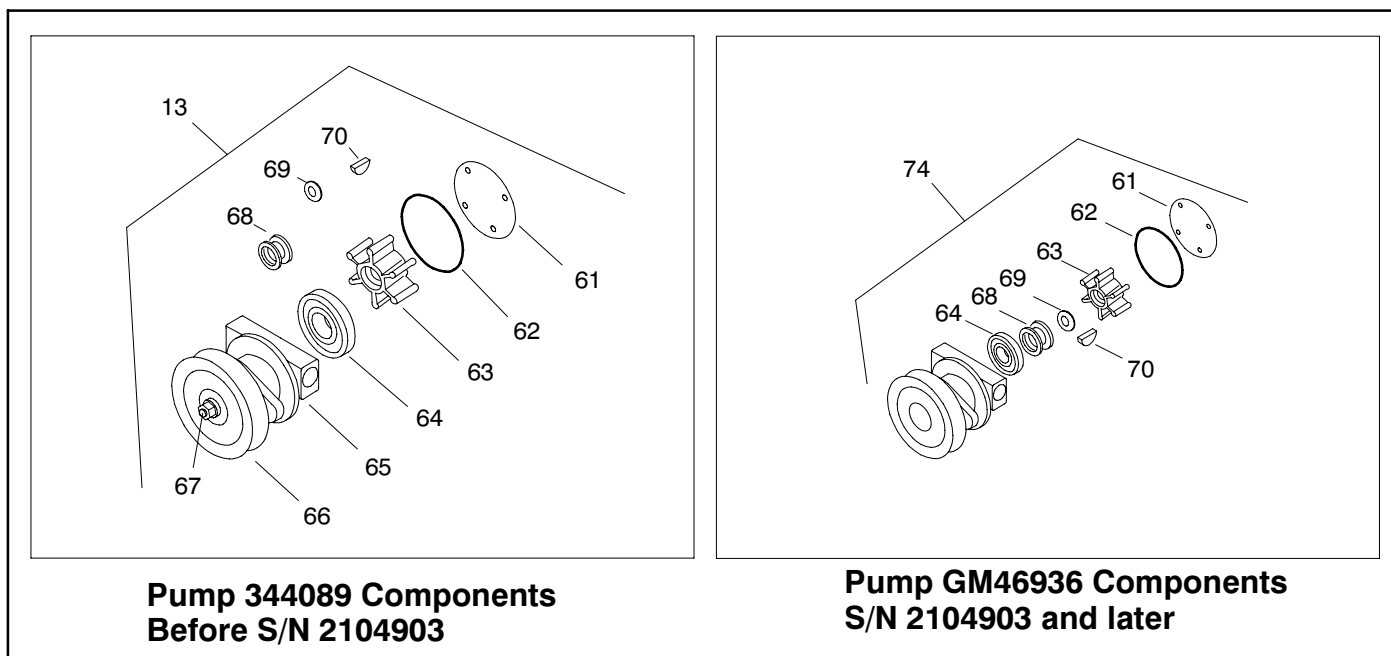
Group 104: Cooling System, continued



Note: Items 1-7, and 51 are removed when an optional sound shield is installed.

6270_104a

Group 104: Cooling System, continued

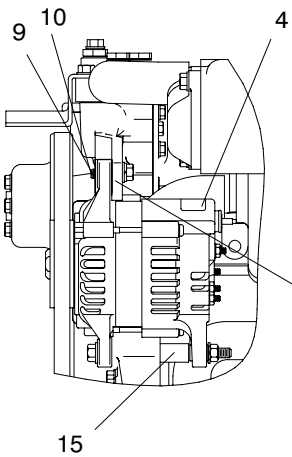
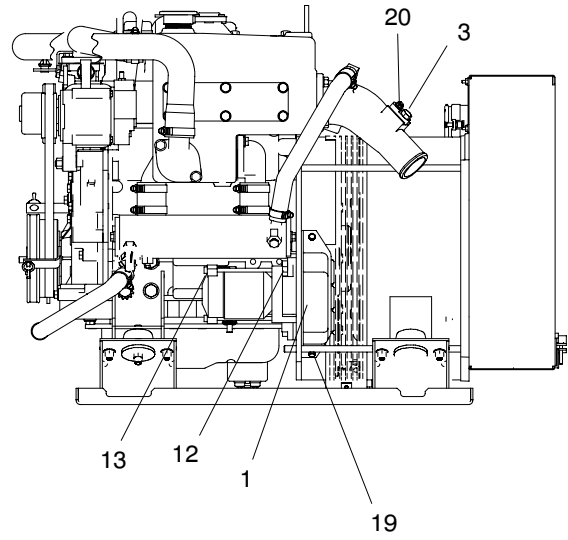
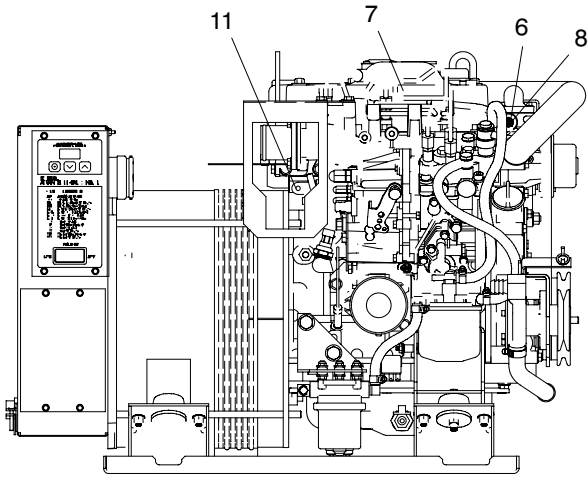


**Pump 344089 Components
Before S/N 2104903**

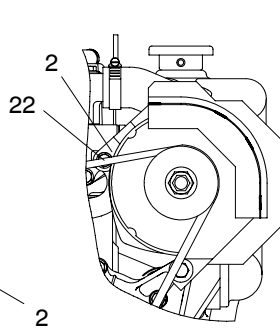
**Pump GM46936 Components
S/N 2104903 and later**

Item	Part Number	Description	Quantity		
			Variation Number		
			GR3	GR10	3
42	GM30880	Exchanger, heat	1	1	
42	GM37676	Exchanger, heat			1
43	260085	Zinc anode	1	1	1
44	X-312-46	Hose, 0.63 in ID	1	1	
44	GM38472	Hose, molded seawater			1
45	X-426-3	Clamp, hose, 1/2 x 1 13/32	4	4	4
46	X-582-2	Connector, hose	1	1	
46	X-391-2	Connector, 90 deg., 5/8 in. ID hose			1
47	X-391-2	Connector, 90 deg., 5/8 in. ID hose	1	1	1
48	X-312-4	Hose, 0.63 in. ID	1	1	
48	X-312-51	Hose, 0.63 in. ID			1
49	229232	Hose	1	1	
49	GM37678	Hose, molded coolant			1
50	X-426-8	Clamp, hose, 1 15/16 x 1 3/16	2	2	2
51	X-672-21	Clamp, insulated	1	1	
52	X-672-3	Clamp, insulated	1	1	
54	X-391-2	Connector, 90 deg., 5/8 in. ID hose	1	1	1
55	359037	Bottle, overflow	1	1	1
56	X-426-9	Clamp, hose	2	2	2
57	X-386-34	Hose	1	1	1
58	229980	Cap	1	1	1
59	GM30570-WHT	Bracket, water bottle	1	1	
59	GM38437-WHT	Bracket, water bottle			1
61	344306	Plate, cover	1	1	1
62	344584	Gasket	1	1	1
63	229826	Kit, impeller (includes gasket)	1	1	1
64	344043	Bearing, ball	1	1	1
65	344585	Housing	1	1	1
66	344606	Pulley	1	1	1
67	344587	Shaft, drive	1	1	1
68	GM16865	Seal	1	1	1
69	GM22995	Seat, ceramic	1	1	1
70	GM17702	Key	1	1	1
71	GM38448	Bracket, heat exchanger			1
72	X-672-33	Clamp, insulated, 2.62 in.			2
73	X-25-85	Washer, 5/16	4	4	
73	M125A-08-80	Washer, plain			4
74	GM46936	Pump, seawater (serial number 2104903 and later)	1	1	1

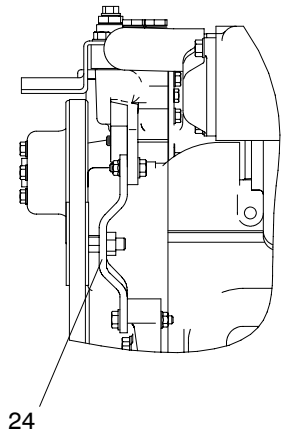
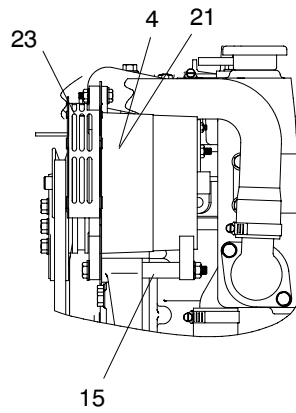
Group 105: Engine



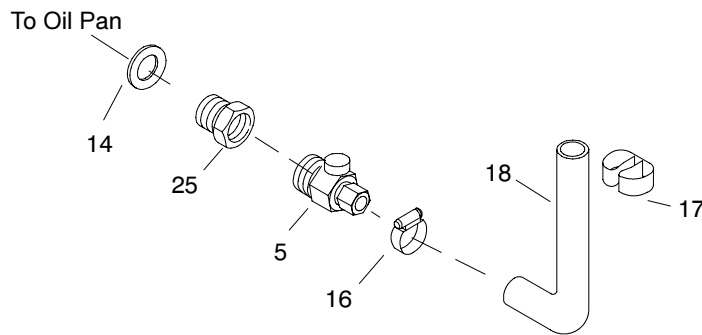
12 Volt Mounting



24 Volt Mounting



Alternator Removed



6270_105a

Group 105: Engine

Item	Part Number	Description	Quantity			
			Variation Number			
			GR4	GR11	3	4
1	229113	Guard, generator fan	1	1		
2	229212	Bracket, alternator fan	1			
2	254784	Arm, alternator adjusting		1		
3	249872	Switch, high temperature cutout	1	1	1	1
4	256924	Alternator	1		1	
4	344742	Alternator		1		
5	359653	Valve, drain	1	1	1	1
6	GM28823	Sender, temperature	1	1	1	1
7	GM29458	Engine assembly, 3TNV82 (see Groups 1-15 for parts)	1	1		
7	GM35300	Engine assembly, 3TNV76 (see Groups 1-15 for parts)			1	1
8	GM30245	Bushing, adapter	1	1	1	1
9	M934-06-60	Nut, hex, 6 mm	1		1	1
10	X-22-11	Washer, lock, 0.262 ID x 0.469 in. OD	2		1	1
11	X-22-16	Washer, lock, 0.326 ID x 0.883 in. OD	5	5	2	2
12	X-22-26	Washer, lock, 0.521 ID x 1.24 in. OD	1	1		
13	X-22-5	Washer, lock, 0.326 ID x 0.62 in. OD	1			
14	X-25-145	Washer, plain, 0.859 ID x 1.185 in. OD	1	1		
15	X-400-258	Spacer	1			
15	X-400-260	Spacer		1		
15	X-400-152	Spacer, 0.344 ID x 0.625 OD x 1.5 in.			1	1
16	X-426-9	Clamp, hose, 0.25/0.720 in.	1	1	1	1
17	X-6084-1	Clip, hose	1	1	1	1
18	X-651-34	Hose	1	1	1	1
19	X-67-113	Screw, hex washer, thread-forming	2	2		
20	X-6238-10	Screw, 3/8-16 x 0.75	2	2	1	1
21	X-431-37	Terminal, flag, female		1		
22	X-400-74	Spacer, 0.344 ID x 0.625 OD x 0.25 in.		1		
23	344815	Guard, alternator fan		1		
24	229484	Pulley, tension assembly (Kit GM33125-KA1)	1	1		1
25	249959	Adapter, bushing	1	1		
25	GM48799	Adapter, bushing 3/8-18 x M16			1	1

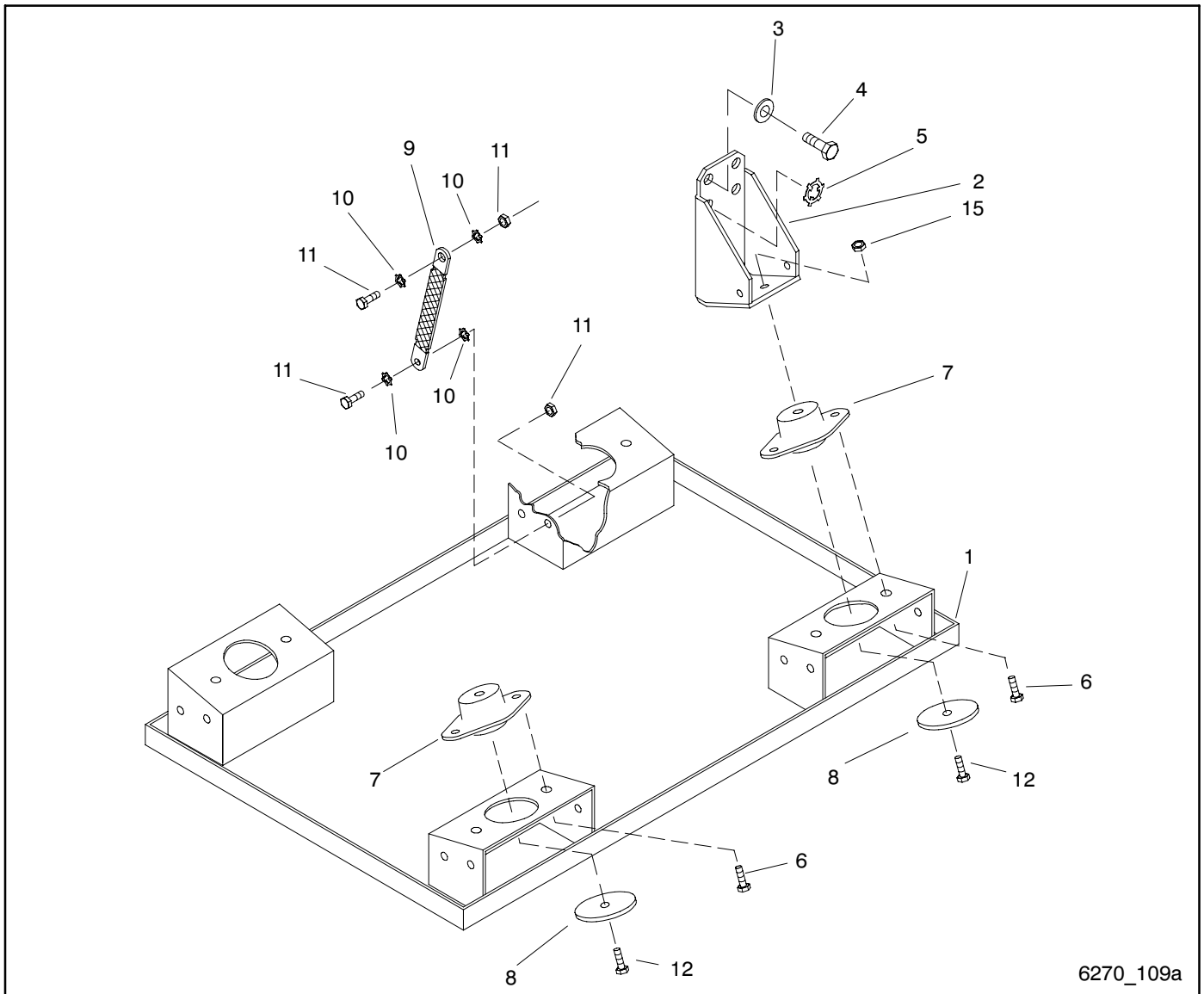
Note: Items 17 and 18 are removed when an optional sound shield is installed.

Group 107: Nameplate and Decals

Item	Part Number	Description	Quantity		
			Variation Number		
			GR5	GR14	3
1	249810	Decal, warning "Hot Coolant"	1	1	1
2	344282	Decal, "Notice Zinc Anode"	1	1	1
3	226917	Decal, negative battery connection	1	1	1
4	344295	Decal, equipment ground	1	1	1
5	GM14167	Decal, drain	3	3	3
6	249808	Decal, warning "Rotating Parts"	1	1	1
7	224233	Decal, 1-800 number	1	1	1
8	294520	Decal, danger "High Voltage"	1	1	1
9	249809	Decal, warning "Hot Engine"	1	1	1
10	359446	Nameplate	1	1	1
11	X-6348-10	Decal, Kohler Power Systems	1	1	1
12	GM35838	Decal, reconnection 1 phase	1		1
12	229883	Decal, reconnection 3 phase		1	
13	344486	Decal, CE	1	1	1
14	246242	Decal, notice "This generator set has been rewired..."	1	1	
15	GM45906	Decal, fuse panel			1

Nameplate and decals not illustrated.

Group 109: Skid and Plant Mounting

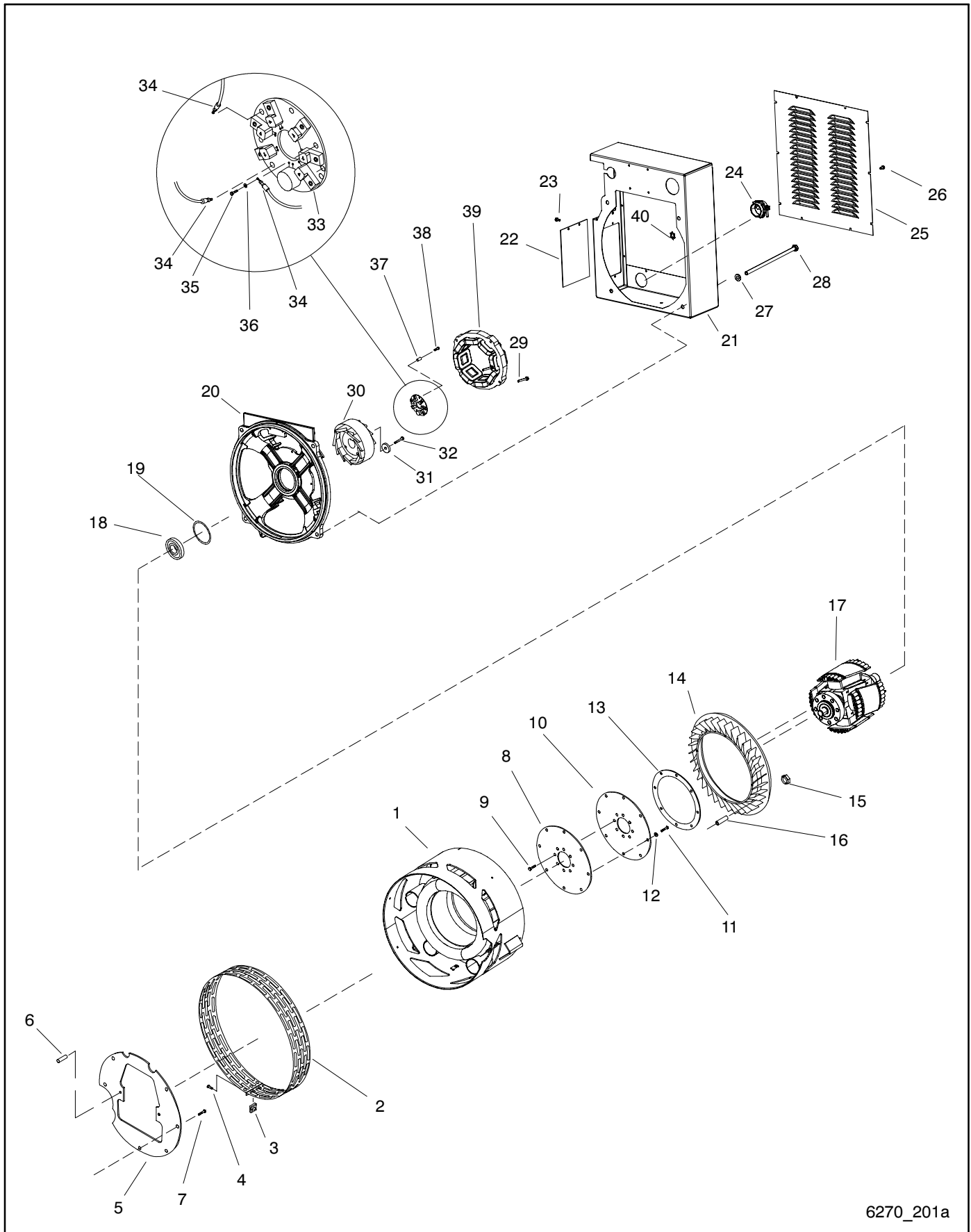


6270_109a

Item	Part Number	Description	Quantity	
			GR6	2
1	GM31907	Tray, drip	1	
1	GM37600	Tray, drip		1
2	GM30382	Support, engine, left side	1	
2	GM32403	Support, engine, right side	1	
2	GM37601	Support, engine		2
3	M125A-12-80	Washer	7	
3	M125A-10-80	Washer		1
4	#	Screw, hex head	8	8
5	X-22-26	Washer, lock, 0.521 ID x 1.24 in. OD	1	
5	X-22-14	Washer, lock, 0.391 ID x 0.975 in. OD		1
6	#	Hardware, M8	8	8
7	278322	Vibromount	4	
7	225124	Vibromount		4
8	X-25-96	Washer, plain, 0.406 ID x 2 in. OD	4	4
9	LK-0606-1515	Lead	1	1
10	X-22-12	Washer, lock, 0.262 ID x 0.743 in. OD	4	4
11	#	Hardware, M6	2	2
12	#	Hardware, M8	4	4
15	M982-08-80	Nut, elastic stop	4	4

Common hardware; procure locally.

Group 201: Generator and Mounting



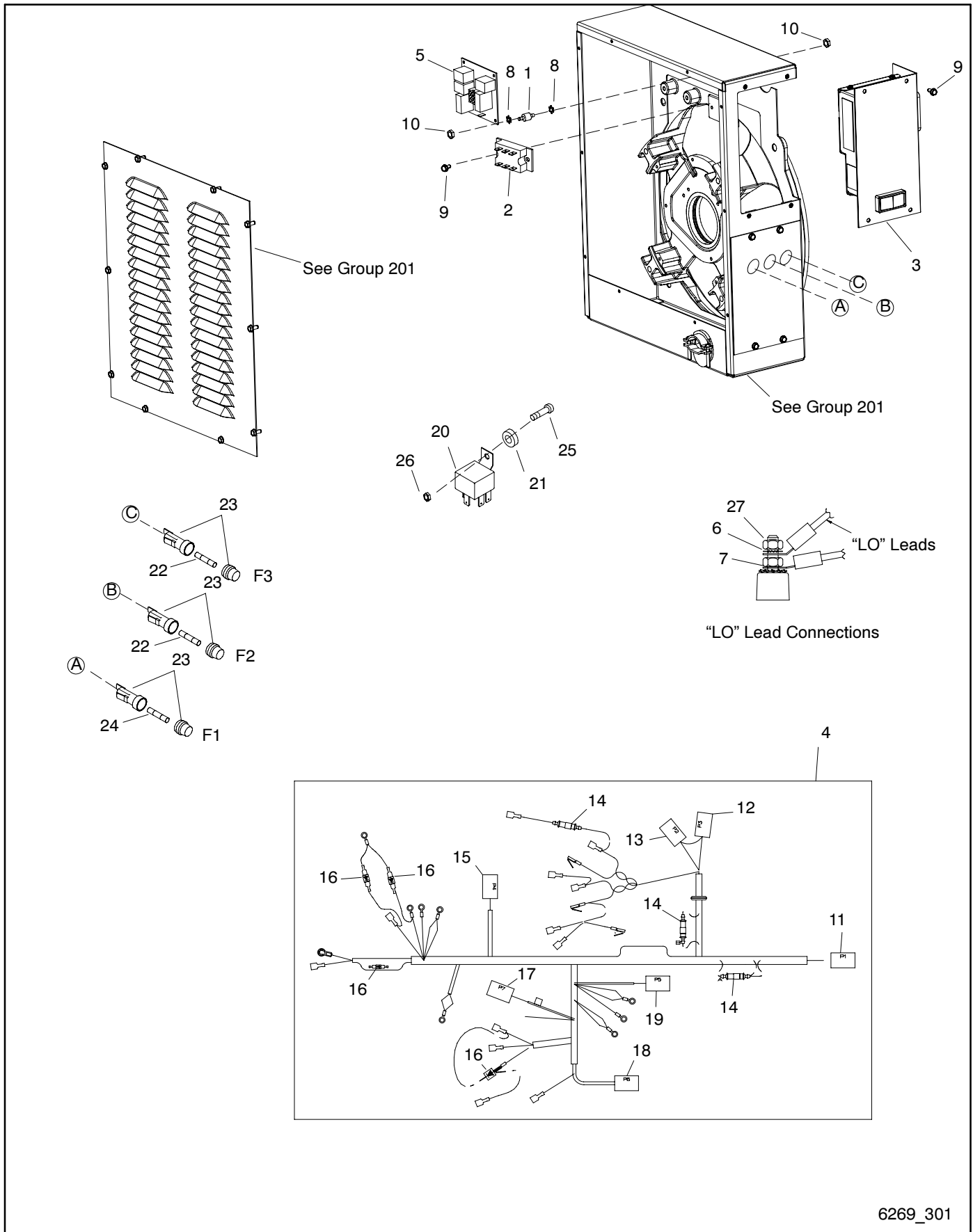
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Group 201: Generator and Mounting

Item	Part Number	Description	Quantity		
			Variation Number		
			GR7	GR13	3
1	GM29342	Stator assembly	1		
1	GM29787	Stator assembly		1	
1	GM29301	Stator assembly			1
2	229109	Guard, generator fan	1	1	1
3	257442	Clip, speed	1	1	1
4	X-67-125	Screw, tapping, 10-24	1	1	1
5	229097	Plate, locator	1	1	
5	229349	Plate, locator			1
6	229356	Pin, knurled	2	2	2
7	M933-10012-60	Screw, M10-1.50	6	6	6
8	GM28588	Disc, drive			1
9	X-6238-3	Screw, 3/8-16 x 0.875	8	8	8
10	257017	Disc, drive	2	2	
10	257014	Disc, drive			2
11	M933-08016-60	Screw, HC M8-1.25	8	8	8
12	M125A-08-80	Washer	8	8	8
13	229346	Disc, fan locator			1
14	225215	Fan, generator	1	1	
14	225214	Fan, generator			1
15	X-6351-7	Nut, flange, whiz lock, M5-0.8			4
15	X-6284-2	Screw, slotted pan head machine	4	4	4
16	X-400-189	Spacer	4	4	4
17	A-229147	Rotor assembly (includes item 18)	1	1	
17	A-229837	Rotor assembly (includes item 18)			1
18	X-758-15	Bearing, ball	1	1	1
19	229110	O-ring	1	1	1
20	GM24810	Bracket, end	1	1	1
21	GM37366	Box, junction	1	1	
21	GM38488	Box, junction			1
22	GM30021	Plate, circuit breaker	1	1	
22	GM46204	Plate, circuit breaker			1
23	X-67-64	Screw, self-tapping	4	4	4
24	X-6266-1	Connector, cable	1	1	1
25	GM29689	Panel, junction box louver	1	1	
25	GM38781	Panel, junction box louver			1
26	X-6216-1	Screw, self-tapping	10	10	14
27	X-801-3	Washer, hardened	4	4	5
28	X-6051-20	Screw, hex head	4	4	
28	M931-10235-60	Screw, hex head			4
29	X-97-15	Screw, hex, 10-24	4	4	4
30	344567	Exciter, armature	1	1	1
31	X-25-129	Washer, plain	1	1	1
32	X-6238-3	Screw, 3/8-16 x 0.875	1	1	1
32	X-22-1	Washer, lock	1	1	1
33	A-229152	Circuit board, diode board	1	1	1
34	X-283-3	Terminal	3	3	3
35	X-51-8	Screw, 8-32 x 0.75	5	5	5
36	X-22-7	Washers, #8	5	5	5
37	X-712-17	Spacer	3	3	3
38	X-67-135	Screw, tapping, 10-24	3	3	3
39	GM30341	Exciter assembly, field	1	1	1
40	X-22-14	Washer, lock, 0.391 ID x 0.975 in. OD	1	1	1

Note: Item 25 is not used when an optional sound shield is installed. The sound shield parts are listed in the Accessory section of this manual.

Group 301: Controller and Mounting



Group 301: Controller and Mounting

Item	Part Number	Description	Quantity		
			Variation Number		
			GR8	GR12	3
1	282829	Vibromount	4	4	4
2	GM28483	SCR module	1	1	1
3	GM34969	Controller assembly, ADC 2100 (kit includes instructions)	1	1	1
4	GM29246	Harness, engine	1	1	
4	GM46350	Harness, engine			1
5	GM29671	PCB assembly, relay board, 12 V	1		1
5	GM29778	PCB assembly, relay board, 24 V		1	
6	X-22-11	Washer, lock, 0.262 ID x 0.469 in. OD	2	2	2
7	X-22-12	Washer, lock, 0.262 ID 0.743 in. OD	2	2	2
8	X-22-20	Washer, lock, 0.172 ID x 0.373 in. OD	8	8	8
9	X-67-64	Screw, self-tapping	6	6	6
10	X-6210-4	Nut, flange whiz, 8-32	8	8	8
11	GM28678	Connector, weathertight	1	1	1
12	320711	Connector, 9-position	1	1	1
13	GM29998	Connector, 6-position, blk, male	1	1	1
14	358337	Fuse, 10 A, 250 V	3	3	
15	229989	Connector, receptacle	1	1	1
16	233959	Diode, 6 A	4	4	4
17	GM15493	Connector, weathertight, 3-position	1	1	1
18	292370	Connector, plug, 2-position	1	1	1
19	GM29249	Connector	1	1	1
20	259391	Relay, 12 V	1		
20	272684	Relay, 24 V		1	
20	GM28787	Relay, 12 V			1
21	200705	Grommet, round	1	1	1
22	223316	Fuse, 10 A, 250 A			2
23	238426	Fuse holder, 0.25 x 1.25 in.			3
24	358337	Fuse, 10 A, 250 V			1
25	M7985A-05012-20	Screw, pan head machine	1	1	1
26	M934-05-50	Nut, hex, 5 mm	1	1	1
27	X-81-8	Nut, hex, 1/4-20	1	1	1

Group 701: Literature

Item	Part Number	Description	Quantity	
			44	69
1	TP-5375	Warranty, Marine	1	1
2	TP-5620	Safety Precautions, Marine	1	1
3	TP-6252	O/M 8-32EOZD/6.5-27EFOZD, Marine	1	1
4	TP-6253	I/M EOZ/EFOZ/EOZD/EFOZD Models, Marine	1	1
5	TP-6255	S/M 8-32EOZD/6.5-27EFOZD, Marine	1	1
6	TP-6270	P/C 9/10EOZD, 7/8.5/9EFOZD Marine	1	1
7	TP-6412	O/M Yanmar TNV Series	1	1
8	TP-6293	S/M Yanmar TNV Series, Marine	1	
8	TP-6383	S/M Yanmar 2TNV/3TNV		1

Paint and Miscellaneous Parts

Item	Part Number	Description
1	221334	White paint, gallon can
1	221335	White paint, spray can

Parts List: Accessories

Qty.	Description	Part No.
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Circuit Breakers

Circuit Breaker Kit GM30331-KA(KP)8

1	Terminal, jumper	249956
1	Plate, circuit breaker	GM30022
4	Screw, pan head, 6-32 x 3/16 in.	X-49-21
1	Circuit breaker, 42 A, 250 V, 2-pole	X-506-43
1	Installation Instructions	TT-1394

Circuit Breaker Kit GM30331-KA(KP)9

1	Plate, circuit breaker	GM30022
4	Screw, pan head, 6-32 x 3/16 in.	X-49-21
1	Circuit breaker, 42 A, 250 V, 2-pole	X-506-43
1	Installation Instructions	TT-1394

Circuit Breaker Kit GM30331-KA(KP)10

1	Plate, cover	229183
1	Plate, circuit breaker	GM30022
2	Screw, pan head, 6-32 x 3/16 in.	X-49-21
2	Screw, pan head, 6-32 x 1/4 in.	X-49-25
1	Circuit breaker, 42 A, 250 V, 1-pole	X-506-60
2	Nut, flange whiz, 6-32	X-6210-3
1	Installation Instructions	TT-1394

Circuit Breaker Kit GM30331-KA(KP)11

1	Plate, cover	229183
1	Plate, circuit breaker	GM30022
2	Screw, pan head, 6-32 x 3/16 in.	X-49-21
2	Screw, pan head, 6-32 x 1/4 in.	X-49-25
1	Circuit breaker	X-506-69
2	Nut, flange whiz, 6-32	X-6210-3
1	Installation Instructions	TT-1394

Circuit Breaker Kit GM30331-KA(KP)45

3	Boot	238915
1	Plate, circuit breaker	GM30024
6	Screw, pan head, 6-32 x 3/16 in.	X-49-21
1	Circuit breaker, 20 A, 600 V, 3-pole	269251
1	Installation Instructions	TT-1395

Circuit Breaker Kit GM30331-KA(KP)55

3	Boot	238915
1	Decal, notice	246242
1	Plate, circuit breaker	GM37377
6	Screw, pan head, 6-32 x 3/16 in.	X-49-21
1	Circuit breaker, 30 A, 480 V, 3-pole	X-506-66
1	Installation Instructions	TT-1395

Circuit Breaker Kit GM30331-KA(KP)56

3	Boot	238915
1	Decal, notice	246242
1	Plate, circuit breaker	GM37377
6	Screw, pan head, 6-32 x 3/16 in.	X-49-21
1	Circuit breaker, 35 A, 480 V, 3-pole	X-506-67
1	Installation Instructions	TT-1395

Circuit Breaker Kit GM46334-KA(KP)1

1	Decal, notice	246242
1	Decal, fuel panel	GM45906
1	Plate, circuit breaker	GM46205
1	Bracket, fuse holder	GM46332
4	Screw, pan head, 6-32 x 3/16 in.	X-49-21
1	Circuit breaker, 42 A, 250 V, 2-pole	X-506-43
1	Channel, U	X-6047-27
1	Installation Instructions	TT-1395

Qty.	Description	Part No.
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Circuit Breaker Kit GM46334-KA(KP)2

1	Decal, notice	246242
1	Terminal, jumper	249956
1	Decal, fuel panel	GM45906
1	Plate, circuit breaker	GM46205
1	Bracket, fuse holder	GM46332
4	Screw, pan head, 6-32 x 3/16 in.	X-49-21
1	Circuit breaker, 42 A, 250 V, 2-pole	X-506-43
1	Channel, U	X-6047-27

Circuit Breaker Kit GM46334-KA(KP)3

1	Plate, cover	229183
1	Decal, fuel panel	GM45906
1	Plate, circuit breaker	GM46205
1	Bracket, fuse holder	GM46332
2	Screw, pan head, 6-32 x 3/16 in.	X-49-21
2	Screw, pan head, 6-32 x 1/4 in.	X-49-25
1	Circuit breaker, 80 A, 250 V, 1-pole	X-506-52
1	Channel, U	X-6047-27

Circuit Breaker Kit GM46334-KA(KP)4

1	Plate, cover	229183
1	Decal, fuel panel	GM45906
1	Plate, circuit breaker	GM46205
1	Bracket, fuse holder	GM46332
2	Screw, pan head, 6-32 x 3/16 in.	X-49-21
2	Screw, pan head, 6-32 x 1/4 in.	X-49-25
1	Circuit breaker, 35 A, 250 V, 1-pole	X-506-46
1	Channel, U	X-6047-27

Circuit Breaker Kit GM46334-KA(KP)5

1	Decal, notice	246242
1	Decal, fuel panel	GM45906
1	Plate, circuit breaker	GM46205
1	Bracket, fuse holder	GM46332
4	Screw, pan head, 6-32 x 3/16 in.	X-49-21
1	Circuit breaker, 33 A, 250 V, 2-pole	X-506-39
1	Channel, U	X-6047-27

Electrical System

Harness, 12 in., Pigtail GM32332-KP1

1	Harness, pigtail	GM32324
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Harness, 15 in., Remote Panel GM32333-KP1

1	Harness, extension	GM30248
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Harness, 25 in., Remote Panel GM32333-KP2

1	Harness, extension	GM32323
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Harness, 100 ft. Remote Panel GM32333-KP4

1	Harness, extension	GM47391
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Harness, Y-Connection GM32333-KP5

1	Harness, Y remote gauge	GM49054
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Parts List: Accessories

Qty.	Description	Part No.
Isolated Ground System GM31865-KA(KP)1		
1	Adapter, sender	229323
4	Insulator, panel	233269
1	Starter relay, 12 VDC, 20 A	259391
1	Vibromount	282829
1	Sensor, pressure	GM28822
1	Switch, high temp. cutout	GM29289
1	Solenoid	GM30412
1	Harness, Engine 9 EOZD Yanmar	GM31764
1	Bus, isolated ground	GM31868
1	Alternator, battery charging	GM31919
1	Tag, hang battery negative	GM35413
1	Bracket, support	GM33029
1	Spacer, .406 ID x .625 OD x .297 in.	X-400-75
1	Cable, battery	X-545-161
1	Cable, battery (black)	X-545-178
2	Stud (metric)	X-6054-23
1	Insulator, standoff	X-6128-35
1	Installation Instructions	TT-1407

Qty.	Description	Part No.
Isolated Ground System GM31865-KA(KP)2		
1	Adapter, sender	229323
4	Insulator, panel	233269
1	Relay	272684
1	Vibromount	282829
1	Sensor, pressure	GM28822
1	Switch, high temp. cutout	GM29289
1	Solenoid	GM30413
1	Harness, Engine 9 EOZD Yanmar	GM31764
1	Bus, isolated ground	GM31868
1	Alternator, battery charging	GM31920
1	Tag, hang battery negative	GM35413
1	Bracket, support	GM33029
1	Spacer, .406 ID x .625 OD x .297 in.	X-400-75
1	Cable, battery	X-545-161
1	Cable, battery (black)	X-545-178
2	Stud (metric)	X-6054-23
1	Insulator, standoff	X-6128-35
1	Installation Instructions	TT-1407

Qty.	Description	Part No.
Isolated Ground System GM31865-KA(KP)3		
1	Adapter, sender	229323
4	Insulator, panel	233269
1	Starter relay, 12 VDC, 20 A	259391
1	Vibromount	282829
1	Sensor, pressure	GM28822
1	Switch, high temp. cutout	GM29289
1	Solenoid	GM30412
1	Harness, Engine 9 EOZD Yanmar	GM31764
1	Bus, isolated ground	GM31868
1	Alternator, battery charging	GM31919
1	Tag, hang battery negative	GM35413
1	Bracket, support	GM33029
1	Spacer, .406 ID x .625 OD x .297 in.	X-400-75
1	Cable, battery	X-545-161
1	Cable, battery (black)	X-545-179
2	Stud (metric)	X-6054-23
1	Insulator, standoff	X-6128-35
1	Installation Instructions	TT-1407

Qty.	Description	Part No.
Isolated Ground System GM31865-KA(KP)4		
1	Adapter, sender	229323
4	Insulator, panel	233269
1	Relay	272684
1	Vibromount	282829
1	Sensor, pressure	GM28822
1	Switch, high temp. cutout	GM29289
1	Solenoid	GM30413
1	Harness, Engine 9 EOZD Yanmar	GM31764
1	Bus, isolated ground	GM31868
1	Alternator, battery charging	GM31920
1	Bracket, support	GM33029
1	Spacer, .406 ID x .625 OD x .297 in.	X-400-75
1	Cable, battery	X-545-161
1	Cable, battery (black)	X-545-178
1	Cable, battery (black)	X-545-179
2	Stud (metric)	X-6054-23
1	Insulator, standoff	X-6128-35
1	Installation Instructions	TT-1407

Qty.	Description	Part No.
Isolated Ground System GM31865-KA(KP)5		
1	Adapter, sender	229323
4	Insulator, panel	233269
1	Starter relay, 12 VDC, 20 A	259391
1	Vibromount	282829
1	Sensor, pressure	GM28822
1	Switch, high temp. cutout	GM29289
1	Solenoid	GM30412
1	Bus, isolated ground	GM31868
1	Alternator, battery charging	GM31919
1	Tag, hang battery negative	GM35413
1	Bracket, support	GM33029
1	Harness, Engine 9 EOZD Yanmar	GM38630
1	Spacer, .406 ID x .625 OD x .297 in.	X-400-75
1	Cable, battery	X-545-161
1	Cable, battery (black)	X-545-178
2	Stud (metric)	X-6054-23
1	Insulator, standoff	X-6128-35

Qty.	Description	Part No.
Isolated Ground System, Sound Shield GM31865-KA(KP)6		
1	Adapter, sender	229323
4	Insulator, panel	233269
1	Starter relay, 12 VDC, 20 A	259391
1	Vibromount	282829
1	Sensor, pressure	GM28822
1	Switch, high temp. cutout	GM29289
1	Solenoid	GM30412
1	Bus, isolated ground	GM31868
1	Alternator, battery charging	GM31919
1	Bracket, support	GM33029
1	Harness, engine 9 EOZD Yanmar	GM38630
1	Spacer, .406 ID x .625 OD x .297 in.	X-400-75
1	Cable, battery	X-545-161
1	Cable, battery (black)	X-545-178
1	Cable, battery (black)	X-545-179
2	Stud (metric)	X-6054-23
1	Insulator, standoff	X-6128-35

Qty.	Description	Part No.
Isolated Standoff GM38314-KA1		
2	Nut, hex, 6mm	M934-06-60
2	Stud (metric)	X-6054-23
1	Insulator, standoff	X-6128-35

Qty.	Description	Part No.
Oil Pressure Sender GM32112-KA(KP)1		
1	Adapter, sender	229323
1	Sensor, pressure	GM28822
1	Installation Instructions	TT-1438

Parts List: Accessories

Qty.	Description	Part No.
Oil Press. and Water Temp. Sender GM24405-KA1		
1	Adapter, sender	225307
1	Sender, water temperature	249287
1	Fitting, 45 deg. street elbow	267428
1	Sender, oil pressure	343473

Preheat Kit, 12 Volt GM32117-KA(KP)1		
1	Wiring harness	229233
1	Relay	233442
1	Boot	238915
1	Washer, lock, 0.262 ID x 0.743 in. OD	X-22-12
1	Installation Instructions	TT-1397

Preheat Kit, 12 Volt GM32117-KA(KP)2		
1	Wiring harness	229233
1	Relay	233442
1	Boot	238915
2	Gasket, air heater	344904
1	Heater, air	344903
1	Bracket, mounting	GM32427
1	Washer, lock, 0.262 ID x 0.743 in. OD	X-22-12
1	Installation Instructions	TT-1397

Preheat Kit, 12 Volt GM32117-KA(KP)3		
1	Wiring harness	229233
1	Boot	238915
1	Solenoid	344741
3	Gasket, air heater	344904
2	Heater, air	344903
1	Bracket, mounting	GM32427
1	Washer, lock, 0.262 ID x 0.743 in. OD	X-22-12
1	Installation Instructions	TT-1397

Preheat Kit, 12 Volt GM32117-KA(KP)10		
1	Wiring harness	229233
1	Relay, 12VDC	233442
2	Boot	238915
2	Mount, controller	241769
1	Bracket, fuel pump	GM38779
1	Installation Instructions	TT-1397

Remote Digital Gauge GM32337-KP1		
1	Decal, warning	249494
1	Gauge, digital	GM30565
1	Harness, remote	GM32325
1	Installation Instructions	TT-1379
1	Installation Instructions	TT-1364

Remote Start Panel GM32335-KP1		
1	Decal, warning	249494
1	Installation instructions	TT-1378
1	Panel assembly, control (includes *)	GM33848-1
1	*Meter, runtime	238736
1	*Panel, control	GM33847
1	*Switch, rocker	GM33849
1	*Harness, wiring	GM33851
2	*Screw, pan head, M3 x 12	M7985A-03012-20
2	*Nut, hex, 3 mm	M934-03-50
2	*Washer, lock, 0.146 ID x 0.285 in. OD	X-22-6

Qty.	Description	Part No.
Remote Start Panel GM32335-KP2		
1	Decal, warning	249494
1	Installation instructions	TT-1378
1	Panel assembly, control (includes *)	GM33848-2
1	*Meter, runtime	238736
1	*Panel, control	GM33847
1	*Switch, rocker	GM33850
1	*Harness, wiring	GM33851
2	*Screw, pan head, M3 x 12	M7985A-03012-20
2	*Nut, hex, 3 mm	M934-03-50
2	*Washer, lock, 0.146 ID x 0.285 in. OD	X-22-6

Ship to Shore Switch PAA-246617		
1	Switch, transfer, 3-pole	A-246617
1	Installation Instructions	TT-535

Miscellaneous Accessories

ABYC Conversion, 9EOZD GM41041-KA(KP)1		
1	Filter assembly, fuel/water separator	GM41013
1	Element, water separator	GM41014
1	Bracket, fuel/water separator	GM41018
1	Decal, notice	GM50378
2	Connector, hose + vibra seal	X-380-4
2	Connector, 90 deg., 5/16 in. ID hose	X-391-25
1	Elbow, street, 90 deg. x 1/4 in. NPTF	X-555-1
2	Line, flex fuel	X-6251-3
1	Line, flex fuel	X-6251-8

ABYC Conversion, 10EOZD GM41041-KA(KP)2		
1	Filter assembly, fuel/water separator	GM41013
1	Element, water separator	GM41014
1	Bracket, fuel/water separator	GM41054
1	Bracket, water bottle	GM41055
1	Decal, notice	GM50378
2	Connector, hose + vibra seal	X-380-4
2	Connector, 90 deg., 5/16 in. ID hose	X-391-25
1	Elbow, street, 90 deg. x 1/4 in. NPTF	X-555-1
2	Line, flex fuel	X-6251-12
1	Line, flex fuel	X-6251-13
1	Line, flex fuel	X-6251-7

Fuel/Water Separator GM31994-KP1		
1	Filter assembly, fuel/water separator	GM32181
1	Element, water separator	GM32182
1	Installation Instructions	TT-1375

Fuel Attachment Block GM33129-KA(KP)1		
1	Fuel block	229835
1	Connector, hose	X-380-4
1	Fuel line, flexible	X-6251-12
1	Fuel line, flexible	X-6251-9
2	Connector, 90 deg., 5/16 in. ID hose	X-391-25
2	Spacer, 0.357 ID x 0.625 OD x 0.656in.	X-400-100
6	Clamp, hose, 0.38/0.88 in.	X-426-18

Keel Cooling Conversion GM32201-KA(KP)2		
1	Gasket, exhaust	249905
1	Flange, exhaust outlet	254692

Keel Cooling Conversion GM32201-KA(KP)6		
1	Gasket, exhaust	249905
1	Flange, exhaust outlet	254692
1	Guard, belt	GM38783

Parts List: Accessories

Qty.	Description	Part No.
Siphon Break PA-229928		
1	Installation Instructions	TT-1268
1	Valve, siphon break (includes *)	GM32985
1	*Valve, duct	328666
1	*Cap, siphon valve	GM32984
1	*Loop, siphon valve loop	GM32988

Siphon Break GM24866-KA1		
1	Tubing, clear flexible plastic	GM34883
1	Clamp, hose, .25/.70	X-426-9
1	Valve, siphon break (includes *)	GM32985
1	*Valve, duct	328666
1	*Cap, siphon valve	GM32984
1	*Loop, siphon valve loop	GM32988

Tray, Stainless Steel GM42297-KA(KP)1		
1	Tray, drip	GM38793

Tray, Stainless Steel GM49018-KA(KP)4		
1	Tray, drip	GM40846

Sound Shield

Siphon Break Hose Connection GM32339-KA(KP)1		
1	Valve, siphon break	229928
2	Coupling, hose	344934
2	Grommet, round	X-284-42
1	Hose, .63 ID	X-312-61
2	Clamp, hose, .56/1.06 in.	X-426-3

Qty.	Description	Part No.
Sound Shield GM30508-KA(KP)1		
1	Installation instructions	TT-1382
8	Washer, 0.281 x 0.625 x 0.065	X-25-142
4	Washer, plain, 0.406 x 0.812 x 0.065	X-25-37
8	Clamp, hose, 2.75/1.81	X-426-16
2	Clamp, hose, 1.06/0.56	X-426-3
4	Screw, hex cap, 1/4-20	X-465-24
4	Screw, hardened, 3/8-16 x 0.62	X-6238-3
2	Hose, 2.0 in. ID x 6.0 in.	GM10073
1	Tube, exhaust, 2 in. OD	229889
4	Connector, outside	GM15486
1	Base, 22.75 x 36.75 in.	GM31925
1	Extruded rail, 21.22 in.	GM30386
2	Extruded rail, 28.38 in.	GM29318
3	Extruded rail, 21.22 in.	GM30385
2	Extruded rail, 17.25 in.	344686
1	Tube, exhaust, 2 in. OD	344694
1	Door, engine end, 18.58 x 17.54 in.	GM34544
1	Door, generator end, 18.58 x 17.54 in.	GM34600
1	Door, left hand nonservice side, 21.32 x 22 in.	GM34596
1	Door, right hand service side, 21.32 x 22 in.	GM34513
1	Panel, junction box, 15.4 x 14.4 in.	GM34617
1	Panel, nonservice side, 8.9 x 22 in.	GM34571
1	Panel ADC, service side, 8.9 x 22 in.	GM34554
1	Roof, 30.3 x 18.6 in.	GM34564
1	Rail, engine end, 18.75 x 4.5 in.	GM34579
1	Bulkhead panel, generator end rail, 18.75 x 4.5 in.	GM34585
24	Screw, drill, #8 stainless steel	X-794-5
2	Retainer, stainless steel, 0.485 in.	GM29918
2	Stud, wing head	GM29920
5	Washer, plain, #6 screw size	M125A-06-80
5	Screw, hex cap, M6 x 16 mm	M933-06016-60
8	Washer, plain, 0.219 ID x 0.5 OD	X-25-36
1	Hose, seawater pump, 0.63 ID x 40 in.	X-312-13
1	Fuel return line, flex., 44 in.	X-6251-14
1	Fuel inlet line, flex., 22 in.	X-6251-9
5	Clamp, hose, 0.38/0.88 in.	X-426-18
4	Bolt, hex cap, 1/4-20 x 0.875	X-465-22
8	Screw, pan head, 10-24 x 1/2	X-50-15
1	Cable, battery, red, (+) to starter	X-545-177
1	Cable, battery, black (-) to ground connection on engine block	X-545-176
2	Washer, nylon, 0.296 ID x 0.516 OD	X-6278-15
2	Seal, push-on trim, 5.81 in.	X-6422-14
2	Seal, push-on trim, 3.19 in.	X-6422-17
1	Connector, hose, 1/4 NPT	X-380-4
1	Hose, oil drain 0.375 ID/0.625 OD x 30 in.	X-651-5
1	Washer, lock, 3/8 in. thread size	X-22-14
1	Nut, hex, 10 mm	M6923-10-80
1	Washer, plain, #10 screw size	M125A-10-80
1	Washer, lock, 1/4 in. thread size	X-22-12
1	Panel, ADC, 8.4 x 4.4 in.	GM30251
1	Bushing, nylon, 0.672 ID	X-634-25
2	Frame, circuit breaker, 5.8 x 2.3 in.	GM29899
3	Foam, insulation acoustic	359584
1	U-channel, 15 in.	X-6047-7
1	Clamp	X-672-21

Parts List: Accessories

Qty.	Description	Part No.
Sound Shield		GM38536-KA(KP)1
3	Foam, acoustic insulation (Yanmar)	359584
4	Connector, outside corner	GM15486
1	Battery lug	GM20744
2	Frame, circuit breaker	GM29899
2	Retainer	GM29918
2	Stud, wing head	GM29920
1	Panel, sound shield ADC lead	GM30251
1	Hose, radiator	GM32052
1	Rail subassembly sound shield, front	GM34508
1	Base, sound shield	GM38539
3	Rail, sound shield	GM38540
1	Rail, sound shield	GM38541
2	Rail, sound shield	GM38542
1	Door subassembly, sound shield, front	GM38546
1	Door subassembly, sound shield, right hand	GM38547
1	Door subassembly, sound shield, left hand	GM38548
1	Door subassembly, sound shield, rear	GM38549
1	Tube, exhaust	GM38562
1	Panel subassembly, bulkhead connection	GM38563
1	Panel subassembly, sound shield exhaust	GM38568
2	Rail, sound shield	GM38578
1	Panel, subassembly, sound shield, right hand	GM38581
1	Panel subassembly, sound shield, left hand	GM38584
1	Roof, subassembly, sound shield	GM38589
1	Panel, junction box	GM38603
1	Panel, junction box	GM42453
5	Washer, plain	M125A-06-80
1	Washer, plain	M125A-10-80
5	Screw, hex cap	M933-06016-60
1	Screw, hex cap	M933-10020-60
2	Washer, lock, 0.262 ID x 0.743 in. OD	X-22-12
1	Washer, lock, 0.391 ID x 0.975 in. OD	X-22-14
9	Washer, plain, 0.281 ID x 0.625 in. OD	X-25-142
8	Washer, plain, 0.219 ID x 0.5 in. OD	X-25-36
4	Washer, plain, 0.406 ID x 0.812 in. OD	X-25-37
1	Hose, 0.63 ID	X-312-51
1	Connector, hose + vibra seal	X-380-4
1	Fuel line, flexible 22 in.	X-6251-9
1	Fuel line, flexible 44 in.	X-6251-14
4	Clamp, hose, 1.81/2.75 in.	X-426-16
2	Clamp, hose, 0.56/1.06 in.	X-426-3
5	Clamp, hose, 0.38/0.88 in.	X-426-18
4	Bolt, hex cap	X-465-22
5	Bolt, hex cap	X-465-24
8	Screw, pan head, 10-24 x 1/2	X-50-15
1	Cable, battery	X-545-175
1	Cable, battery, black	X-545-193
1	Conduit, convoluted	X-6003-26
1	Conduit, convoluted	X-6003-27
1	Conduit, convoluted	X-6003-32
1	Conduit, convoluted	X-6003-14
1	Conduit, convoluted	X-6003-48
1	Conduit, convoluted	X-6003-105
1	Channel, U	X-6047-27
2	U-channel	X-6047-45
4	Bolt, hex cap	X-6238-3
2	Washer, nylon	X-6278-15
1	Bushing, 0.672 x 0.875 in. NPT	X-634-25
2	Seal, push-on trim	X-6422-14
2	Seal, push-on trim	X-6422-17
1	Hose, rubber, straight, 0.375 in. ID	X-651-15
24	Screw, drill #8 stainless steel	X-794-5

Appendix A Abbreviations

The following list contains abbreviations that may appear in this publication.

A, amp	ampere	cfm	cubic feet per minute	ext.	external
ABDC	after bottom dead center	CG	center of gravity	F	Fahrenheit, female
AC	alternating current	CID	cubic inch displacement	fglass.	fiberglass
A/D	analog to digital	CL	centerline	FHM	flat head machine (screw)
ADC	analog to digital converter	cm	centimeter	fl. oz.	fluid ounce
adj.	adjust, adjustment	CMOS	complementary metal oxide substrate (semiconductor)	flex.	flexible
ADV	advertising dimensional drawing	cogen.	cogeneration	freq.	frequency
AHWT	anticipatory high water temperature	com	communications (port)	FS	full scale
AISI	American Iron and Steel Institute	coml	commercial	ft.	foot, feet
ALOP	anticipatory low oil pressure	Coml/Rec	Commercial/Recreational	ft. lb.	foot pounds (torque)
alt.	alternator	conn.	connection	ft./min.	feet per minute
Al	aluminum	cont.	continued	g	gram
ANSI	American National Standards Institute (formerly American Standards Association, ASA)	CPVC	chlorinated polyvinyl chloride	ga.	gauge (meters, wire size)
AO	anticipatory only	crit.	critical	gal.	gallon
API	American Petroleum Institute	CRT	cathode ray tube	gen.	generator
approx.	approximate, approximately	CSA	Canadian Standards Association	genset	generator set
AR	as required, as requested	CT	current transformer	GFI	ground fault interrupter
AS	as supplied, as stated, as suggested	Cu	copper	GND, ⊕	ground
ASE	American Society of Engineers	cu. in.	cubic inch	gov.	governor
ASME	American Society of Mechanical Engineers	cw.	clockwise	gph	gallons per hour
assy.	assembly	CWC	city water-cooled	gpm	gallons per minute
ASTM	American Society for Testing Materials	cyl.	cylinder	gr.	grade, gross
ATDC	after top dead center	D/A	digital to analog	GRD	equipment ground
ATS	automatic transfer switch	DAC	digital to analog converter	gr. wt.	gross weight
auto.	automatic	dB	decibel	H x W x D	height by width by depth
aux.	auxiliary	dBA	decibel (A weighted)	HC	hex cap
A/V	audiovisual	DC	direct current	HCHT	high cylinder head temperature
AVR	automatic voltage regulator	DCR	direct current resistance	HD	heavy duty
AWG	American Wire Gauge	deg., °	degree	HET	high exhaust temperature, high engine temperature
AWM	appliance wiring material	dept.	department	hex	hexagon
bat.	battery	dia.	diameter	Hg	mercury (element)
BBDC	before bottom dead center	DI/EO	dual inlet/end outlet	HH	hex head
BC	battery charger, battery charging	DIN	Deutsches Institut für Normung e. V. (also Deutsche Industrie Normenausschuss)	HHC	hex head cap
BCA	battery charging alternator	DIP	dual inline package	HP	horsepower
BCI	Battery Council International	DPDT	double-pole, double-throw	hr.	hour
BDC	before dead center	DPST	double-pole, single-throw	HS	heat shrink
BHP	brake horsepower	DS	disconnect switch	hsg.	housing
blk.	black (paint color), block (engine)	DVR	digital voltage regulator	HVAC	heating, ventilation, and air conditioning
blk. htr.	block heater	E, emer.	emergency (power source)	HWT	high water temperature
BMEP	brake mean effective pressure	EDI	electronic data interchange	Hz	hertz (cycles per second)
bps	bits per second	EFR	emergency frequency relay for example (<i>exempli gratia</i>)	IC	integrated circuit
br.	brass	e.g.	for example (<i>exempli gratia</i>)	ID	inside diameter, identification
BTDC	before top dead center	EG	electronic governor	IEC	International Electrotechnical Commission
Btu	British thermal unit	EGSA	Electrical Generating Systems Association	IEEE	Institute of Electrical and Electronics Engineers
Btu/min.	British thermal units per minute	EIA	Electronic Industries Association	IMS	improved motor starting
C	Celsius, centigrade	EI/EO	end inlet/end outlet	in.	inch
cal.	calorie	EMI	electromagnetic interference	in. H ₂ O	inches of water
CARB	California Air Resources Board	emiss.	emission	in. Hg	inches of mercury
CB	circuit breaker	eng.	engine	in. lb.	inch pounds
cc	cubic centimeter	EPA	Environmental Protection Agency	Inc.	incorporated
CCA	cold cranking amps	EPS	emergency power system	ind.	industrial
ccw.	counterclockwise	ER	emergency relay	int.	internal
CEC	Canadian Electrical Code	ES	engineering special, engineered special	int./ext.	internal/external
cert.	certificate, certification, certified	ESD	electrostatic discharge	I/O	input/output
cfh	cubic feet per hour	est.	estimated	IP	iron pipe
		E-Stop	emergency stop	ISO	International Organization for Standardization
		etc.	et cetera (and so forth)	J	joule
		exh.	exhaust	JIS	Japanese Industry Standard
				k	kilo (1000)
				K	kelvin

kA	kiloampere	MTBO	mean time between overhauls	rly.	relay
KB	kilobyte (2 ¹⁰ bytes)	mtg.	mounting	rms	root mean square
kg	kilogram	MW	megawatt	rnd.	round
kg/cm ²	kilograms per square centimeter	mW	milliwatt	ROM	read only memory
kgm	kilogram-meter	μF	microfarad	rot.	rotate, rotating
kg/m ³	kilograms per cubic meter	N, norm.	normal (power source)	rpm	revolutions per minute
kHz	kilohertz	NA	not available, not applicable	RS	right side
kJ	kilojoule	nat. gas	natural gas	RTV	room temperature vulcanization
km	kilometer	NBS	National Bureau of Standards	SAE	Society of Automotive Engineers
kOhm, kΩ	kilo-ohm	NC	normally closed	scfm	standard cubic feet per minute
kPa	kilopascal	NEC	National Electrical Code	SCR	silicon controlled rectifier
kph	kilometers per hour	NEMA	National Electrical Manufacturers Association	s, sec.	second
kV	kilovolt	NFPA	National Fire Protection Association	SI	<i>Systeme international d'unites</i> , International System of Units
kVA	kilovolt ampere	Nm	newton meter	SI/EO	side in/end out
kVAR	kilovolt ampere reactive	NO	normally open	sil.	silencer
kW	kilowatt	no., nos.	number, numbers	SN	serial number
kWh	kilowatt-hour	NPS	National Pipe, Straight	SPDT	single-pole, double-throw
kWm	kilowatt mechanical	NPSC	National Pipe, Straight-coupling	SPST	single-pole, single-throw
L	liter	NPT	National Standard taper pipe thread per general use	spec, specs	specification(s)
LAN	local area network	NPTF	National Pipe, Taper-Fine	sq.	square
L x W x H	length by width by height	NR	not required, normal relay	sq. cm	square centimeter
lb.	pound, pounds	ns	nanosecond	sq. in.	square inch
lbm/ft ³	pounds mass per cubic feet	OC	overcrank	SS	stainless steel
LCB	line circuit breaker	OD	outside diameter	std.	standard
LCD	liquid crystal display	OEM	original equipment manufacturer	stl.	steel
ld. shd.	load shed	OF	overfrequency	tach.	tachometer
LED	light emitting diode	opt.	option, optional	TD	time delay
Lph	liters per hour	OS	oversize, overspeed	TDC	top dead center
Lpm	liters per minute	OSHA	Occupational Safety and Health Administration	TDEC	time delay engine cooldown
LOP	low oil pressure	OV	overvoltage	TDEN	time delay emergency to normal
LP	liquefied petroleum	oz.	ounce	TDES	time delay engine start
LPG	liquefied petroleum gas	p., pp.	page, pages	TDNE	time delay normal to emergency
LS	left side	PC	personal computer	TDOE	time delay off to emergency
L _{wa}	sound power level, A weighted	PCB	printed circuit board	TDON	time delay off to normal
LWL	low water level	pF	picofarad	temp.	temperature
LWT	low water temperature	PF	power factor	term.	terminal
m	meter, milli (1/1000)	ph., ∅	phase	TIF	telephone influence factor
M	mega (10 ⁶ when used with SI units), male	PHC	Phillips head crimplite (screw)	TIR	total indicator reading
m ³	cubic meter	PHH	Phillips hex head (screw)	tol.	tolerance
m ³ /min.	cubic meters per minute	PHM	pan head machine (screw)	turbo.	turbocharger
mA	milliampere	PLC	programmable logic control	typ.	typical (same in multiple locations)
man.	manual	PMG	permanent-magnet generator	UF	underfrequency
max.	maximum	pot	potentiometer, potential	UHF	ultrahigh frequency
MB	megabyte (2 ²⁰ bytes)	ppm	parts per million	UL	Underwriter's Laboratories, Inc.
MCM	one thousand circular mils	PROM	programmable read-only memory	UNC	unified coarse thread (was NC)
MCCB	molded-case circuit breaker	psi	pounds per square inch	UNF	unified fine thread (was NF)
meggarr	megohmmeter	pt.	pint	univ.	universal
MHz	megahertz	PTC	positive temperature coefficient	US	undersize, underspeed
mi.	mile	PTO	power takeoff	UV	ultraviolet, undervoltage
mil	one one-thousandth of an inch	PVC	polyvinyl chloride	V	volt
min.	minimum, minute	qt.	quart, quarts	VAC	volts alternating current
misc.	miscellaneous	qty.	quantity	VAR	voltampere reactive
MJ	megajoule	R	replacement (emergency) power source	VDC	volts direct current
mJ	millijoule	rad.	radiator, radius	VFD	vacuum fluorescent display
mm	millimeter	RAM	random access memory	VGA	video graphics adapter
mOhm, mΩ	milliohm	RDO	relay driver output	VHF	very high frequency
MOhm, MΩ	megohm	ref.	reference	W	watt
MOV	metal oxide varistor	rem.	remote	WCR	withstand and closing rating
MPa	megapascal	Res/Coml	Residential/Commercial	w/	with
mpg	miles per gallon	RFI	radio frequency interference	w/o	without
mpg	miles per gallon	RH	round head	wt.	weight
mph	miles per hour	RHM	round head machine (screw)	xfmr	transformer
MS	military standard				
m/sec.	meters per second				
MTBF	mean time between failure				

Appendix B Common Hardware Application Guidelines

Use the information below and on the following pages to identify proper fastening techniques when no specific reference for reassembly is made.

Bolt/Screw Length: When bolt/screw length is not given, use Figure 1 as a guide. As a general rule, a minimum length of one thread beyond the nut and a maximum length of 1/2 the bolt/screw diameter beyond the nut is the preferred method.

Washers and Nuts: Use split lock washers as a bolt locking device where specified. Use SAE flat washers with whiz nuts, spirallock nuts, or standard nuts and preloading (torque) of the bolt in all other applications.

See Appendix C, General Torque Specifications, and other torque specifications in the service literature.

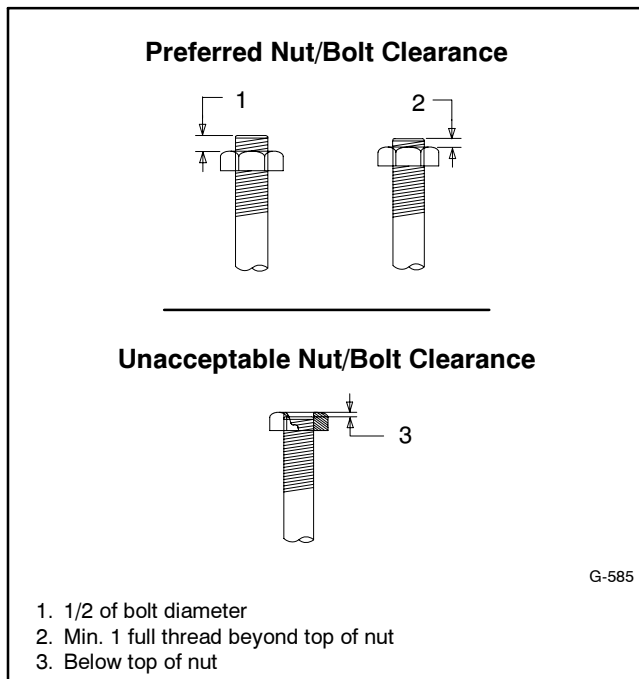


Figure 1 Acceptable Bolt Lengths

Steps for common hardware application:

1. Determine entry hole type: round or slotted.
2. Determine exit hole type: fixed female thread (weld nut), round, or slotted.

For round and slotted exit holes, determine if hardware is greater than 1/2 inch in diameter, or 1/2 inch in diameter or less. Hardware that is *greater than 1/2 inch* in diameter takes a standard nut and SAE washer. Hardware *1/2 inch or less* in diameter can take a properly torqued whiz nut or spirallock nut. See Figure 2.

3. Follow these SAE washer rules after determining exit hole type:
 - a. Always use a washer between hardware and a slot.
 - b. Always use a washer under a nut (see 2 above for exception).
 - c. Use a washer under a bolt when the female thread is fixed (weld nut).
4. Refer to Figure 2, which depicts the preceding hardware configuration possibilities.

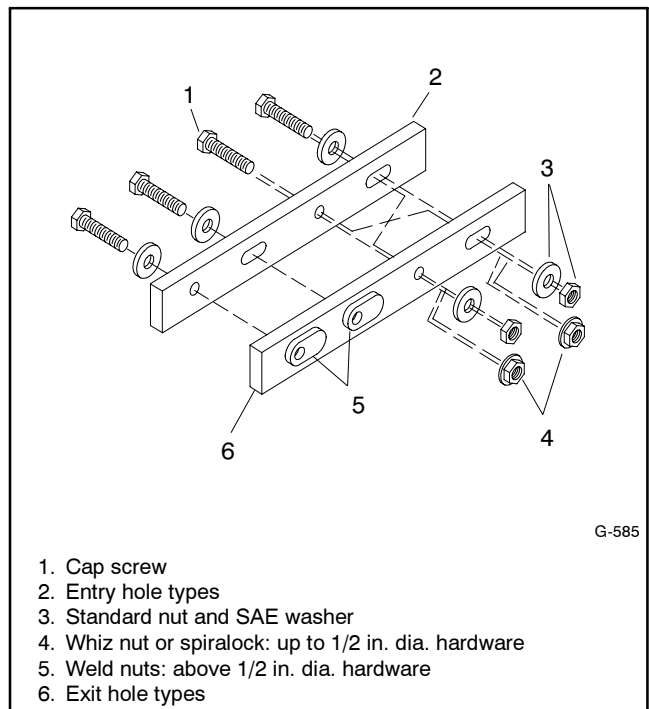


Figure 2 Acceptable Hardware Combinations

Appendix C General Torque Specifications















American Standard Fasteners Torque Specifications					
Size	Torque Measurement	Assembled into Cast Iron or Steel			Assembled into Aluminum Grade 2 or 5
		Grade 2	Grade 5	Grade 8	
8-32	Nm (in. lb.)	1.8 (16)	2.3 (20)	—	See Note 3
10-24	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	
10-32	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	
1/4-20	Nm (in. lb.)	6.8 (60)	10.8 (96)	14.9 (132)	
1/4-28	Nm (in. lb.)	8.1 (72)	12.2 (108)	16.3 (144)	
5/16-18	Nm (in. lb.)	13.6 (120)	21.7 (192)	29.8 (264)	
5/16-24	Nm (in. lb.)	14.9 (132)	23.1 (204)	32.5 (288)	
3/8-16	Nm (ft. lb.)	24.0 (18)	38.0 (28)	53.0 (39)	
3/8-24	Nm (ft. lb.)	27.0 (20)	42.0 (31)	60.0 (44)	
7/16-14	Nm (ft. lb.)	39.0 (29)	60.0 (44)	85.0 (63)	
7/16-20	Nm (ft. lb.)	43.0 (32)	68.0 (50)	95.0 (70)	
1/2-13	Nm (ft. lb.)	60.0 (44)	92.0 (68)	130.0 (96)	
1/2-20	Nm (ft. lb.)	66.0 (49)	103.0 (76)	146.0 (108)	
9/16-12	Nm (ft. lb.)	81.0 (60)	133.0 (98)	187.0 (138)	
9/16-18	Nm (ft. lb.)	91.0 (67)	148.0 (109)	209.0 (154)	
5/8-11	Nm (ft. lb.)	113.0 (83)	183.0 (135)	259.0 (191)	
5/8-18	Nm (ft. lb.)	128.0 (94)	208.0 (153)	293.0 (216)	
3/4-10	Nm (ft. lb.)	199.0 (147)	325.0 (240)	458.0 (338)	
3/4-16	Nm (ft. lb.)	222.0 (164)	363.0 (268)	513.0 (378)	
1-8	Nm (ft. lb.)	259.0 (191)	721.0 (532)	1109.0 (818)	
1-12	Nm (ft. lb.)	283.0 (209)	789.0 (582)	1214.0 (895)	












Metric Fasteners Torque Specifications, Measured in Nm (ft. lb.)				
Size (mm)	Assembled into Cast Iron or Steel			Assembled into Aluminum Grade 5.8 or 8.8
	Grade 5.8	Grade 8.8	Grade 10.9	
M6 x 1.00	6.2 (4.6)	9.5 (7)	13.6 (10)	See Note 3
M8 x 1.25	15.0 (11)	23.0 (17)	33.0 (24)	
M8 x 1.00	16.0 (11)	24.0 (18)	34.0 (25)	
M10 x 1.50	30.0 (22)	45.0 (34)	65.0 (48)	
M10 x 1.25	31.0 (23)	47.0 (35)	68.0 (50)	
M12 x 1.75	53.0 (39)	80.0 (59)	115.0 (85)	
M12 x 1.50	56.0 (41)	85.0 (63)	122.0 (90)	
M14 x 2.00	83.0 (61)	126.0 (93)	180.0 (133)	
M14 x 1.50	87.0 (64)	133.0 (98)	190.0 (140)	
M16 x 2.00	127.0 (94)	194.0 (143)	278.0 (205)	
M16 x 1.50	132.0 (97)	201.0 (148)	287.0 (212)	
M18 x 2.50	179.0 (132)	273.0 (201)	390.0 (288)	
M18 x 1.50	189.0 (140)	289.0 (213)	413.0 (305)	






Notes:

1. The torque values above are general guidelines. Always use the torque values specified in the service manuals and/or assembly drawings when they differ from the above torque values.
2. The torque values above are based on new plated threads. Increase torque values by 15% if non-plated threads are used.
3. Hardware threaded into aluminum must have either two diameters of thread engagement or a 30% or more reduction in the torque to prevent stripped threads.
4. Torque values are calculated as equivalent stress loading on American hardware with an approximate preload of 90% of the yield strength and a friction coefficient of 0.125.

Appendix D Common Hardware Identification

Screw/Bolts/Studs	
Head Styles	
Hex Head or Machine Head	
Hex Head or Machine Head with Washer	
Flat Head (FHM)	
Round Head (RHM)	
Pan Head	
Hex Socket Head Cap or Allen™ Head Cap	
Hex Socket Head or Allen™ Head Shoulder Bolt	
Sheet Metal Screw	
Stud	
Drive Styles	
Hex	
Hex and Slotted	
Phillips®	
Slotted	
Hex Socket	

Nuts	
Nut Styles	
Hex Head	
Lock or Elastic	
Square	
Cap or Acorn	
Wing	
Washers	
Washer Styles	
Plain	
Split Lock or Spring	
Spring or Wave	
External Tooth Lock	
Internal Tooth Lock	
Internal-External Tooth Lock	

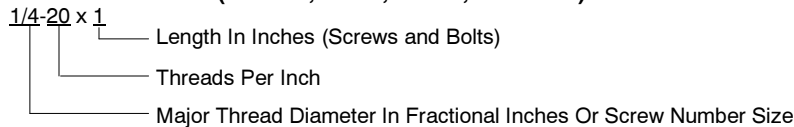
Hardness Grades	
American Standard	
Grade 2	
Grade 5	
Grade 8	
Grade 8/9 (Hex Socket Head)	
Metric	
Number stamped on hardware; 5.8 shown	

Allen™ head screw is a trademark of Holo-Krome Co.

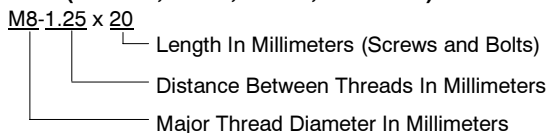
Phillips® screw is a registered trademark of Phillips Screw Company.

Sample Dimensions

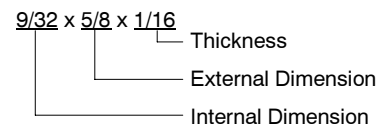
American Standard (Screws, Bolts, Studs, and Nuts)



Metric (Screws, Bolts, Studs, and Nuts)



Plain Washers



Lock Washers



Appendix E Common Hardware List

The Common Hardware List lists part numbers and dimensions for common hardware items.

American Standard

Part No. Dimensions Hex Head Bolts (Grade 5)

X-465-17	1/4-20 x .38
X-465-6	1/4-20 x .50
X-465-2	1/4-20 x .62
X-465-16	1/4-20 x .75
X-465-18	1/4-20 x .88
X-465-7	1/4-20 x 1.00
X-465-8	1/4-20 x 1.25
X-465-9	1/4-20 x 1.50
X-465-10	1/4-20 x 1.75
X-465-11	1/4-20 x 2.00
X-465-12	1/4-20 x 2.25
X-465-14	1/4-20 x 2.75
X-465-21	1/4-20 x 5.00
X-465-25	1/4-28 x .38
X-465-20	1/4-28 x 1.00
X-125-33	5/16-18 x .50
X-125-23	5/16-18 x .62
X-125-3	5/16-18 x .75
X-125-31	5/16-18 x .88
X-125-5	5/16-18 x 1.00
X-125-24	5/16-18 x 1.25
X-125-34	5/16-18 x 1.50
X-125-25	5/16-18 x 1.75
X-125-26	5/16-18 x 2.00
230578	5/16-18 x 2.25
X-125-29	5/16-18 x 2.50
X-125-27	5/16-18 x 2.75
X-125-28	5/16-18 x 3.00
X-125-22	5/16-18 x 4.50
X-125-32	5/16-18 x 5.00
X-125-35	5/16-18 x 5.50
X-125-36	5/16-18 x 6.00
X-125-40	5/16-18 x 6.50
X-125-43	5/16-24 x 1.75
X-125-44	5/16-24 x 2.50
X-125-30	5/16-24 x .75
X-125-39	5/16-24 x 2.00
X-125-38	5/16-24 x 2.75
X-6238-2	3/8-16 x .62
X-6238-10	3/8-16 x .75
X-6238-3	3/8-16 x .88
X-6238-11	3/8-16 x 1.00
X-6238-4	3/8-16 x 1.25
X-6238-5	3/8-16 x 1.50
X-6238-1	3/8-16 x 1.75
X-6238-6	3/8-16 x 2.00
X-6238-17	3/8-16 x 2.25
X-6238-7	3/8-16 x 2.50
X-6238-8	3/8-16 x 2.75
X-6238-9	3/8-16 x 3.00
X-6238-19	3/8-16 x 3.25
X-6238-12	3/8-16 x 3.50
X-6238-20	3/8-16 x 3.75
X-6238-13	3/8-16 x 4.50
X-6238-18	3/8-16 x 5.50
X-6238-25	3/8-16 x 6.50

Part No. Dimensions Hex Head Bolts, cont.

X-6238-14	3/8-24 x .75
X-6238-16	3/8-24 x 1.25
X-6238-21	3/8-24 x 4.00
X-6238-22	3/8-24 x 4.50
X-6024-5	7/16-14 x .75
X-6024-2	7/16-14 x 1.00
X-6024-8	7/16-14 x 1.25
X-6024-3	7/16-14 x 1.50
X-6024-4	7/16-14 x 2.00
X-6024-11	7/16-14 x 2.75
X-6024-12	7/16-14 x 6.50
X-129-15	1/2-13 x .75
X-129-17	1/2-13 x 1.00
X-129-18	1/2-13 x 1.25
X-129-19	1/2-13 x 1.50
X-129-20	1/2-13 x 1.75
X-129-21	1/2-13 x 2.00
X-129-22	1/2-13 x 2.25
X-129-23	1/2-13 x 2.50
X-129-24	1/2-13 x 2.75
X-129-25	1/2-13 x 3.00
X-129-27	1/2-13 x 3.50
X-129-29	1/2-13 x 4.00
X-129-30	1/2-13 x 4.50
X-463-9	1/2-13 x 5.50
X-129-44	1/2-13 x 6.00
X-129-51	1/2-20 x .75
X-129-45	1/2-20 x 1.25
X-129-52	1/2-20 x 1.50
X-6021-3	5/8-11 x 1.00
X-6021-4	5/8-11 x 1.25
X-6021-2	5/8-11 x 1.50
X-6021-1	5/8-11 x 1.75
273049	5/8-11 x 2.00
X-6021-5	5/8-11 x 2.25
X-6021-6	5/8-11 x 2.50
X-6021-7	5/8-11 x 2.75
X-6021-12	5/8-11 x 3.75
X-6021-11	5/8-11 x 4.50
X-6021-10	5/8-11 x 6.00
X-6021-9	5/8-18 x 2.50
X-6239-1	3/4-10 x 1.00
X-6239-8	3/4-10 x 1.25
X-6239-2	3/4-10 x 1.50
X-6239-3	3/4-10 x 2.00
X-6239-4	3/4-10 x 2.50
X-6239-5	3/4-10 x 3.00
X-6239-6	3/4-10 x 3.50
X-792-1	1-8 x 2.25
X-792-5	1-8 x 3.00
X-792-8	1-8 x 5.00

Part No. Dimensions Type

Hex Nuts

X-6009-1	1-8	Standard
X-6210-3	6-32	Whiz
X-6210-4	8-32	Whiz
X-6210-5	10-24	Whiz
X-6210-1	10-32	Whiz
X-6210-2	1/4-20	Spiralock
X-6210-6	1/4-28	Spiralock
X-6210-7	5/16-18	Spiralock
X-6210-8	5/16-24	Spiralock
X-6210-9	3/8-16	Spiralock
X-6210-10	3/8-24	Spiralock
X-6210-11	7/16-14	Spiralock
X-6210-12	1/2-13	Spiralock
X-6210-15	7/16-20	Spiralock
X-6210-14	1/2-20	Spiralock
X-85-3	5/8-11	Standard
X-88-12	3/4-10	Standard
X-89-2	1/2-20	Standard

Washers

Part No.	ID	OD	Thick.	Bolt/ Screw
X-25-46	.125	.250	.022	#4
X-25-9	.156	.375	.049	#6
X-25-48	.188	.438	.049	#8
X-25-36	.219	.500	.049	#10
X-25-40	.281	.625	.065	1/4
X-25-85	.344	.687	.065	5/16
X-25-37	.406	.812	.065	3/8
X-25-34	.469	.922	.065	7/16
X-25-26	.531	1.062	.095	1/2
X-25-15	.656	1.312	.095	5/8
X-25-29	.812	1.469	.134	3/4
X-25-127	1.062	2.000	.134	1

Metric

Hex head bolts are hardness grade 8.8 unless noted.

Part No.	Dimensions	Part No.	Dimensions	Part No.	Dimensions
Hex Head Bolts (Partial Thread)					
M931-05055-60	M5-0.80 x 55				
M931-06040-60	M6-1.00 x 40				
M931-06055-60	M6-1.00 x 55				
M931-06060-60	M6-1.00 x 60				
M931-06060-SS	M6-1.00 x 60				
M931-06070-60	M6-1.00 x 70				
M931-06070-SS	M6-1.00 x 70				
M931-06075-60	M6-1.00 x 75				
M931-06090-60	M6-1.00 x 90				
M931-06145-60	M6-1.00 x 145				
M931-06150-60	M6-1.00 x 150				
Hex Head Bolts (Partial Thread), continued					
M931-08035-60	M8-1.25 x 35				
M931-08040-60	M8-1.25 x 40				
M931-08045-60	M8-1.25 x 45				
M931-08050-60	M8-1.25 x 50				
M931-08055-60	M8-1.25 x 55				
M931-08055-82	M8-1.25 x 55*				
M931-08060-60	M8-1.25 x 60				
M931-08070-60	M8-1.25 x 70				
M931-08070-82	M8-1.25 x 70*				
M931-08075-60	M8-1.25 x 75				
M931-08080-60	M8-1.25 x 80				
M931-08090-60	M8-1.25 x 90				
M931-08095-60	M8-1.25 x 95				
M931-08100-60	M8-1.25 x 100				
M931-08110-60	M8-1.25 x 110				
M931-08120-60	M8-1.25 x 120				
M931-08130-60	M8-1.25 x 130				
M931-08140-60	M8-1.25 x 140				
M931-08150-60	M8-1.25 x 150				
M931-08200-60	M8-1.25 x 200				
M931-10040-82	M10-1.25 x 40*				
M931-10040-60	M10-1.50 x 40				
M931-10045-60	M10-1.50 x 45				
M931-10050-60	M10-1.50 x 50				
M931-10050-82	M10-1.25 x 50*				
M931-10055-60	M10-1.50 x 55				
M931-10060-60	M10-1.50 x 60				
M931-10065-60	M10-1.50 x 65				
M931-10070-60	M10-1.50 x 70				
M931-10080-60	M10-1.50 x 80				
M931-10080-82	M10-1.25 x 80*				
M931-10090-60	M10-1.50 x 90				
M931-10090-82	M10-1.50 x 90*				
M931-10100-60	M10-1.50 x 100				
M931-10110-60	M10-1.50 x 110				
M931-10120-60	M10-1.50 x 120				
M931-10130-60	M10-1.50 x 130				
M931-10140-60	M10-1.50 x 140				
M931-10180-60	M10-1.50 x 180				
M931-10235-60	M10-1.50 x 235				
M931-10260-60	M10-1.50 x 260				
M960-10330-60	M10-1.25 x 330				
M931-12045-60	M12-1.75 x 45				
M960-12050-60	M12-1.25 x 50				
M960-12050-82	M12-1.25 x 50*				
M931-12050-60	M12-1.75 x 50				
M931-12050-82	M12-1.75 x 50*				
M931-12055-60	M12-1.75 x 55				
M931-12060-60	M12-1.75 x 60				
M931-12060-82	M12-1.75 x 60*				
M931-12065-60	M12-1.75 x 65				
M931-12075-60	M12-1.75 x 75				
M931-12080-60	M12-1.75 x 80				
M931-12090-60	M12-1.75 x 90				
M931-12100-60	M12-1.75 x 100				
M931-12110-60	M12-1.75 x 110				
Hex Head Bolts (Full Thread)					
M960-16090-60	M16-1.50 x 90				
M931-16090-60	M16-2.00 x 90				
M931-16100-60	M16-2.00 x 100				
M931-16100-82	M16-2.00 x 100*				
M931-16120-60	M16-2.00 x 120				
M931-16150-60	M16-2.00 x 150				
M931-20065-60	M20-2.50 x 65				
M931-20090-60	M20-2.50 x 90				
M931-20100-60	M20-2.50 x 100				
M931-20120-60	M20-2.50 x 120				
M931-20140-60	M20-2.50 x 140				
M931-20160-60	M20-2.50 x 160				
M931-22090-60	M22-2.50 x 90				
M931-22120-60	M22-2.50 x 120				
M931-22160-60	M22-2.50 x 160				
M931-24090-60	M24-3.00 x 90				
M931-24120-60	M24-3.00 x 120				
M931-24160-60	M24-3.00 x 160				
M931-24200-60	M24-3.00 x 200				
M933-04006-60	M4-0.70 x 6				
M933-05030-60	M5-0.80 x 30				
M933-05035-60	M5-0.80 x 35				
M933-05050-60	M5-0.80 x 50				
M933-06010-60	M6-1.00 x 10				
M933-06012-60	M6-1.00 x 12				
M933-06014-60	M6-1.00 x 14				
M933-06016-60	M6-1.00 x 16				
M933-06020-60	M6-1.00 x 20				
M933-06025-60	M6-1.00 x 25				
M933-06030-60	M6-1.00 x 30				
M933-06040-60	M6-1.00 x 40				
M933-06050-60	M6-1.00 x 50				
M933-07025-60	M7-1.00 x 25				
M933-08010-60	M8-1.25 x 10				
M933-08012-60	M8-1.25 x 12				
M933-08016-60	M8-1.25 x 16				
M933-08020-60	M8-1.25 x 20				
M933-08025-60	M8-1.25 x 25				
M933-08030-60	M8-1.25 x 30				
M933-08030-82	M8-1.25 x 30*				
M933-10012-60	M10-1.50 x 12				
M961-10020-60	M10-1.25 x 20				
M933-10020-60	M10-1.50 x 20				
M933-10025-60	M10-1.50 x 25				
M961-10025-60	M10-1.25 x 25				
M933-10025-82	M10-1.50 x 25*				
M961-10030-60	M10-1.25 x 30				
M933-10030-60	M10-1.50 x 30				
M933-10030-82	M10-1.50 x 30*				
M961-10035-60	M10-1.25 x 35				
M933-10035-60	M10-1.50 x 35				
M933-10035-82	M10-1.50 x 35*				
M961-10040-60	M10-1.25 x 40				
M933-12016-60	M12-1.75 x 16				
M933-12020-60	M12-1.75 x 20				
M961-12020-60F	M12-1.50 x 20				
M933-12025-60	M12-1.75 x 25				
M933-12025-82	M12-1.75 x 25*				
M961-12030-60	M12-1.25 x 30				
M933-12030-82	M12-1.75 x 30*				
M961-12030-82F	M12-1.50 x 30*				
M933-12030-60	M12-1.75 x 30				
M933-12035-60	M12-1.75 x 35				
M961-12040-82	M12-1.25 x 40*				
M933-12040-60	M12-1.75 x 40				
M933-12040-82	M12-1.75 x 40*				
M961-14025-60	M14-1.50 x 25				
M933-14025-60	M14-2.00 x 25				
M961-14050-82	M14-1.50 x 50*				
M961-16025-60	M16-1.50 x 25				
M933-16025-60	M16-2.00 x 25				
M961-16030-82	M16-1.50 x 30*				
M933-16030-82	M16-2.00 x 30*				
M933-16035-60	M16-2.00 x 35				
M961-16040-60	M16-1.50 x 40				
M933-16040-60	M16-2.00 x 40				
M961-16045-82	M16-1.50 x 45*				
M933-16045-82	M16-2.00 x 45*				
M933-16050-60	M16-2.00 x 50				
M933-16050-82	M16-2.00 x 50*				
M933-16060-60	M16-2.00 x 60				
M933-16070-60	M16-2.00 x 70				
M933-18035-60	M18-2.50 x 35				
M933-18050-60	M18-2.50 x 50				
M933-18060-60	M18-2.50 x 60				
M933-20050-60	M20-2.50 x 50				
M933-20055-60	M20-2.50 x 55				
M933-24060-60	M24-3.00 x 60				
M933-24065-60	M24-3.00 x 65				
M933-24070-60	M24-3.00 x 70				
Pan Head Machine Screws					
M7985A-03010-20	M3-0.50 x 10				
M7985A-03012-20	M3-0.50 x 12				
M7985A-04010-20	M4-0.70 x 10				
M7985A-04016-20	M4-0.70 x 16				
M7985A-04020-20	M4-0.70 x 20				
M7985A-04050-20	M4-0.70 x 50				
M7985A-04100-20	M4-0.70 x 100				
M7985A-05010-20	M5-0.80 x 10				
M7985A-05012-20	M5-0.80 x 12				
M7985A-05016-20	M5-0.80 x 16				
M7985A-05020-20	M5-0.80 x 20				
M7985A-05025-20	M5-0.80 x 25				
M7985A-05030-20	M5-0.80 x 30				
M7985A-05080-20	M5-0.80 x 80				
M7985A-05100-20	M5-0.80 x 100				
M7985A-06100-20	M6-1.00 x 100				
Flat Head Machine Screws					
M965A-04012-SS	M4-0.70 x 12				
M965A-05012-SS	M5-0.80 x 12				
M965A-05016-20	M5-0.80 x 16				
M965A-06012-20	M6-1.00 x 12				

* This metric hex bolt's hardness is grade 10.9.

Metric, continued

Part No.	Dimensions	Type
Hex Nuts		
M934-03-50	M3-0.50	Standard
M934-04-50	M4-0.70	Standard
M934-04-B	M4-0.70	Brass
M934-05-50	M5-0.80	Standard
M934-06-60	M6-1.00	Standard
M934-06-64	M6-1.00	Std. (green)
M6923-06-80	M6-1.00	Spiralock
M982-06-80	M6-1.00	Elastic Stop
M934-08-60	M8-1.25	Standard
M6923-08-80	M8-1.25	Spiralock
M982-08-80	M8-1.25	Elastic Stop
M934-10-60	M10-1.50	Standard
M934-10-60F	M10-1.25	Standard
M6923-10-80	M10-1.50	Spiralock
M6923-10-62	M10-1.50	Spiralock†
M982-10-80	M10-1.50	Elastic Stop
M934-12-60	M12-1.75	Standard
M934-12-60F	M12-1.25	Standard
M6923-12-80	M12-1.75	Spiralock
M982-12-80	M12-1.75	Elastic Stop
M982-14-60	M14-2.00	Elastic Stop
M6923-16-80	M16-2.00	Spiralock
M982-16-80	M16-2.00	Elastic Stop
M934-18-80	M18-2.5	Standard
M982-18-60	M18-2.50	Elastic Stop
M934-20-80	M20-2.50	Standard
M982-20-80	M20-2.50	Elastic Stop
M934-22-60	M22-2.50	Standard
M934-24-80	M24-3.00	Standard
M982-24-60	M24-3.00	Elastic Stop
M934-30-80	M30-3.50	Standard

Washers

Part No.	ID	OD	Thick.	Bolt/ Screw
M125A-03-80	3.2	7.0	0.5	M3
M125A-04-80	4.3	9.0	0.8	M4
M125A-05-80	5.3	10.0	1.0	M5
M125A-06-80	6.4	12.0	1.6	M6
M125A-08-80	8.4	16.0	1.6	M8
M125A-10-80	10.5	20.0	2.0	M10
M125A-12-80	13.0	24.0	2.5	M12
M125A-14-80	15.0	28.0	2.5	M14
M125A-16-80	17.0	30.0	3.0	M16
M125A-18-80	19.0	34.0	3.0	M18
M125A-20-80	21.0	37.0	3.0	M20
M125A-24-80	25.0	44.0	4.0	M24

† This metric hex nut's hardness is grade 8.

TP-6270 11/06c

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